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TABLE OF CONTENTS

	Page
KEYNOTE ADDRESS at the 1977 Biennial Convention American Association of Workers for the Blind, Inc. Portland, Oregon July 17-20, 1977	1
INTERNATIONAL BLINDNESS: A CHALLENGE TO OUR TECHNOLOGY, UNITY AND PROFESSIONAL PHILOSOPHY	1
SIR JOHN WILSON, C.B.E. Director, Royal Common- wealth Society for the Blind, President, Inter- national Agency for the Prevention of Blindness	
DEVELOPMENT OF POLICIES IN THE UNITED STATES AND CANADA FOR SERVICES TO THE VISUALLY HANDICAPPED	8
TOWARD AN ACCESSIBLE ENVIRONMENT: A REVIEW OF RECENT DEVELOPMENTS	8
MARGARET MILNER, Director of Programs, National Center for a Barrier Free Environment	
SHIFTS IN FEDERAL POLICY TOWARD BLINDNESS	15
John L. Duncan, Legislative Aide to the Sub-Committee on Select Education, U.S. House of Representatives	
SCIENCE, PUBLIC POLICY AND THE VISUALLY IMPAIRED	18
DR. GEORGE G. MALLINSON, Distinguished Professor of Education and Science Education	
REPORT OF THE MASSACHUSETTS COMMISSION FOR THE BLIND NEEDS ASSESSMENT STUDY	23
ANNE MARIE DELANEY, Formerly Research Director Massachusetts Commission For the Blind	

	Page
A CNIB VIEW OF AAWB	44
W. E. MILTON, Assistant Managing Director, Profes- sional Development and Client Services	
CHANGING POPULATIONS OF THE BLIND	49
CHANGES IN THE POPULATION OF BLIND CHILDREN	49
GERALDINE T. SCHOLL, The University of Michigan	
CHANGING POPULATION OF THE BLIND IN THE UNITED STATES: THE GERIATRIC BLIND	57
BONNY RUSSELL, San Jose State University	
THE IMPACT ON EMPLOYMENT OF A CHANGING POPULATION OF BLIND PERSONS IN THE U.S. WORK FORCE	68
GEORGE A. MAGERS, Director, Division of Rehabilitation	
THE FRAMINGHAM EYE STUDY	77
FRED EDERER, National Eye Institute	
LOW VISION AND ITS IMPLICATIONS	86
DEFINING THE LOW VISION SERVICE	86
RANDALL T. JOSE, O.D., Chief, Vision Rehabilitation Service, The Eye Institute	
LOW VISION--COMMON CAUSES, CURRENT TREATMENTS	90
WILLIAM B. SHEKTER, M.D., Chief Department of Ophthalmology	
A CLEAR PERSPECTIVE ON LOW VISION	94
AUGUST COLENBRANDER, M.D. Pacific Medical Center	

	Page
IMPACT OF LOW VISION SERVICES ON A MULTIPLE SERVICE AGENCY	107
MILTON A. JAHODA, A.C.S.W. Cincinnati Association for the Blind	
PRIORITIES AND PITFALLS IN LOW VISION CARE	115
BRUCE P. ROSENTHAL, O.D., F.A.A.O., Low Vision Clinician	
CONSUMER PARTICIPATION	120
CONSUMER PARTICIPATION IN THE VIRGINIA COMMISSION FOR THE VISUALLY HANDICAPPED	120
THOMAS C. MICHAEL, State Supervisor, Department of Vocational Rehabilitation	
SOME THOUGHTS FROM A FORMER CONSUMER	125
FRANK S. PENLAND, Director Education Services	
CONSUMER PARTICIPATION-- VISION CANADA	129
LOUISE D. COWAN, M.S.W. Coordinating Consultant, Social Services	
THE TEACHING FUNCTION	
THE BEST OF THE PAST	133
C. WARREN BLEDSOE	
LAURA BRIDGMAN AND HER TEACHERS	136
JOHN BERNARD MANNIX	
THE USE OF BEHAVIORAL OBJECTIVES IN REHABILITATION	154
ANNE YEADON, Rehabilitation Consultant	

	Page
VISION-UP WITH MULTISENSORY IMPAIRED CHILDREN: ADAPTATIONS AND RATIONALE	174
MAURINE OTOS, Coordinator, Oregon Programs for Deaf-Blind	
MISCELLANY	180
THE IMPACT OF A BLIND MEMBER ON OTHERS IN THE FAMILY	180
CARROLL AULT, M.S.W., Western Blind Rehabilitation Center	
FOSTERING IMPROVED RELATIONSHIPS BETWEEN OFFICIAL AND VOLUNTARY AGENCIES FOR THE BLIND	197
HAROLD RICHTERMAN, National Industries for the Blind	
ANOTHER FACE OF COMPUTING: SERVICES TO THE BLIND	205
PAUL A. FORTIER, Associate Professor AND DONALD KEEPING, Supervisor, University of Manitoba	

BLINDNESS 1977-1978

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INTRODUCTION

BLINDNESS 1977-1978 is the thirteenth issue of an annual published by the American Association of Workers for the Blind. The articles herein consist mainly of papers that were presented at the 1977 Biennial Convention of the American Association of Workers for the Blind, Inc. that was held in Portland, Oregon July 17-20, 1978. Because many of the materials were prepared to deliver orally, it was necessary in some cases to edit them to bring them into article style. Every effort was made, however, to respect the integrity of the original ideas. All the articles that appear in BLINDNESS 1977-1978 were reviewed by at least one member of the Publications Board, in some cases by an outside reviewer, by the staff of the Central Office of AAWB, and by the Editor. Hopefully the intent to preserve the integrity of the materials was implemented.

In order to make the annual more relevant, except for the Keynote Address, the articles were grouped into six sections with the following titles.

- A. Development of Policies in the United States and Canada for Services to the Visually Handicapped
- B. Changing Populations of the Blind
- C. Low Vision and Its Implications
- D. Consumer Participation
- E. The Teaching Function
- F. Miscellany

As with previous annuals, it is hoped that BLINDNESS 1977-1978 reflects the movement of human thought with respect to blindness and

stimulates original thinking and excellence of practice in the field.

Copies of BLINDNESS 1977-1978 are distributed to members of the Association as a function of membership. The Library of Congress, Division for the Blind and Physically Handicapped, will make the annual available through regional libraries in both braille and recorded form.

George G. Mallinson, Editor

KEYNOTE ADDRESS
at the
1977 Biennial Convention
American Association of Workers for the Blind, Inc.
Portland, Oregon
July 17-20, 1977

The Keynote Address was given by Sir John Wilson, Director, Royal Commonwealth Society for the Blind. His presentation emphasized that many of the systems and technologies for blind rehabilitation that have proved successful in developed countries are far too advanced for the states of culture in some of the underdeveloped nations. Nevertheless, humanitarianism dictates that the expertise of the developed countries be modified and adapted to the needs of those who have much lower standards of living. Some mechanisms must be found to accomplish the modification and adaptation and export them.

INTERNATIONAL BLINDNESS: A CHALLENGE TO OUR TECHNOLOGY,
UNITY AND PROFESSIONAL PHILOSOPHY

by

Sir John Wilson, C.B.E.
Director, Royal Commonwealth Society for the Blind
and
President, International Agency for the
Prevention of Blindness

It was with a true sense of pleasure and privilege that I travelled this week from my home in England to Portland, Oregon, to participate in this convention in the city of roses, conservation and basketball. However, as we flew through that long day, I could not help remembering a different journey I made a few months ago to Bangladesh. I had not been there since the bitter famine winter of 1972. As the aircraft droned on through the night, I found my mind preparing itself for the impact--building a sort of conceptual protecting barrier. You tell yourself it is useless to be overwhelmed by the misery of the place. If you are going to get anything done, you must try to see the individual predicament in the cold perspective of economic objectives and national priorities.

In a pressurized aircraft some 30,000 feet above the earth's surface, it is fairly easy to accept the anaesthetizing abstraction

in which poverty and famine fit into a pattern of development. But, on the next day you are in a jeep--travelling through some villages where life seems balanced on a knife edge of disaster. You meet a blind village girl who is hungry, ill and utterly weary with a demanding, sighted baby at her breast. Famine is not an abstraction here. Rather, it is a blind girl like that in a village.

You go to the ophthalmic clinic in Chittagong where you see a concrete floor, a Bangladesh doctor with a confident voice and clattering boots. There upon the table are babies too frail even to cry. In the corner, there is an old blind man who whimpers as the light from the doctor's torch hurts his eyes. Blinding malnutrition is not an abstraction. It is a clinic like that. It is the data on the chart prepared at the UNICEF office in Dacca. They show that it was a good winter last year in Bangladesh--only 25,000 babies went blind.

Later, on that tour, I spent a day with blind beggars--some of the 8,000 destitute blind people whose only home is the streets of Calcutta. They fight other beggars for the right to beg in the streets of the more affluent neighborhoods. One old, blind woman sleeps at night on a fallen wooden billboard. Fortunately, she can't see that it advertises soft drinks. Perhaps I should have told them about the blessings of rehabilitation or their rights of participation. Instead, we talked about another community of blind beggars in West Africa and about their leader, Sarakin Makafi. That is not his name, but his title. In the Hausa language, it literally means "King of the Blind." He rules over the blind mendicants' guild of Kano City which, until its recent decline, had over 900 members. The guild, like other guilds--leather workers, weavers, silversmiths--has a traditional civic function. It exists, Sarakin Makafa will tell you, to give to sighted citizens the opportunity to exercise their Muslim obligation of charitableness. Some of the guild members have learned Braille, basketwork and mobility, but they consider these activities as pastimes unrelated to the serious business of collecting alms.

I have described this bizarre arrangement because, in a sense, it represents our "alternative society." Sarakin Makafi and his members look with equal disenchantment on blind welfare and on the activities of organizations of and for the blind. To them, the agencies and federations are indistinguishable partners in a welfare conspiracy that they regard with the utmost suspicion. They challenge our professional assurance by their assumption that, in relation to the depressed condition of most blind people of the world, an organized medicant community offers greater benefits than our rehabilitation and welfare.

At a convention such as this, at the confident professional pinnacle of work for the blind, it is easy to be amused by such aberrations. But, they do not appear so funny if you are a lonely pioneer trying, with inadequate funds, to start a rehabilitation program in an Asian city or the only special teacher among African tribesmen.

From Portland, Oregon, a rehabilitation program looks like a solid part of a universal social structure. From the streets of Calcutta, it may look more like a rich man's pastime. A number of your major institutions each spend more money every year on their few thousand clients than is available for the entire blind welfare system of a country like Pakistan. This is not just a pedestrian contrast between rich and poor. Rather, it forces us to examine the relevance of our technology and the validity of many cherished assumptions.

In Paris in August 1977, ICEVH will affirm the right of all blind children to a competent education. It is appropriate that they should do this but only in a few advanced countries will this right have any current reality. Nine out of 10 blind children throughout the developing world have no chance of education in this generation. We applaud ILO's declaration that rehabilitation is a human right but, in most developing countries, not one blind person in a thousand has training for a satisfactory job. In the international perspective, the rehabilitated, self-supporting blind person is a minute exception. The norm, in massive majority, is the blind dependent and mendicant--illiterate and destitute--at the bottom of every social and economic heap.

We draw our elegant, professional line between medical and social aspects of blindness. This is reasonable in a country where no person remains needlessly blind. Yet, the most obscene fact about blindness in the developing world is that millions remain blind for lack of surgical treatment that could restore their sight at about the cost of a Braille slate. The Indian government estimates that there are nine million blind people in India and that 5.2 million of them could have sight restored or substantially improved. At the World Health Organization's Inter-regional Meeting in Baghdad last year, it was stated that two-thirds of all the blindness in the developing countries results from four diseases that are preventable or curable by existing technology at an acceptable level of cost effectiveness. If I may be permitted a commercial, teams sponsored in 1976 by the Royal Commonwealth Society for the Blind in 15 countries performed 118,000 sight-restoring operations mainly in Asian Eye Camps where a cataract operation costs about \$5.00.

It would be bad enough if this were a static situation. But, over much of the developing world, blindness is geared to the dynamic of population growth. This is why many of us believe that there can be no solution simply in terms of rehabilitation. Unless decisive action is taken, the number of the blind will swamp all our institutions.

The most encouraging fact in this dismal situation is that, under the leadership of the World Health Organization and the International Agency, preventable blindness is now being attacked as a major priority in the health strategy of the United Nations. Resources are being mobilized that could have decisive impact on "river blindness" that darkens the lives of whole communities in West Africa;

on trachoma that blinds millions in the Middle East; on malnutrition that is the world's largest cause of infant blindness; and on cataract that so needlessly blinds people in Asia by the hundreds of thousands.

At this level, it is meaningless to draw a distinction between medical and social aspects of blindness. But, as the world effort of prevention gains momentum, we may at the same time generate interest and resources for convincing action for the rehabilitation of the blind throughout the developing world. The World Council for the Welfare of the Blind and the International Federation of the Blind have done much to create international awareness. But, they would be the first to admit that, so far, the efforts of all of us are marginal in relation to the total, massive, mounting scale of world blindness.

Is it possible that, in the next quarter century, we may have an opportunity not only to break the link between blindness and population growth, but also to promote throughout the developing world adequate services for the blind. These must be concerned not with hundreds, but with scores of thousands, of blind people--not with single institutions, but with whole national and regional systems.

We cannot implement these challenges without also asking ourselves, whether we have a sufficiently relevant technology, a professional philosophy robust and realistic enough, a unity of purpose sufficient to grasp, indeed to create, such an opportunity.

If indeed the answer is positive, then you here in North America have a critical leadership role. The requirement is for action and resources. You have a major share of the world's resources in money, personnel, and inventiveness.

In principle, we all vote for resolutions in favor of virtue and world enlightenment. What in practice are our inhibitions? We have domestic preoccupations, disenchantment with overseas entanglements, and lack of coordination. But, I believe that our first hangup is the old, sad difference between "of" and "for," our inability to reconcile the aspirations of the organized blind with the interests of the executive agencies and to bring both motivations together to power a single national and international effort.

You did not invent this controversy here in the United States, but, as with so many other things, you seem now to have more of it than anywhere else. In your vigorous hands it is more divisive both in its domestic and export models. Yet, you need only glance through the resolutions of the World Council and the International Federation to see that, in relation to broad international objectives, there is a true identity of interest and aim. If there is such a philosophy of work for the blind, then, in this final quarter of the Twentieth Century, it must be one that reconciles both the aspirations of the organized blind and the legitimate role of the executive agency.

It must recognize that the organizations of the blind--however abrasive they may have been--have brought into this cause a freshening vision of the significance of the individual, an understanding and compassion for the human predicament of blindness, and a political awareness that linked our cause to some of the strongest convictions of contemporary society--nondiscrimination, civil rights, and the status of minorities.

It must recognize also that, at the executive level, work for the blind has become a highly professional business. It demands of its agency staff--whether they be blind or sighted and whoever controls them--specialized and managerial skills and an accountability not only to their clients, or for that matter to their subscribers, but also to public policy and to society as a whole. Such recognitions need not support either side of the argument. They would, I believe, be accepted by all but a few extremists. Of course, the controversial point in any sociological analysis is to define what one means by "extremists." I do not want to dodge that question but let me give my definition in terms of prototype personalities who at least have the advantage that they have been dead long enough not to be regarded by anyone as personal allusions.

Do you remember Orpheus and his journey into the underworld? His mission was to rescue his girlfriend, Eurydice, from the gloom and misery of the regions of darkness. With his God-given powers of light, music and charm, he was permitted to descend, on behalf of humanity, into the stygian darkness. But he must never look at Eurydice during the journey because, if he did, the magic would fail and they would be separated forever. I do not know whether they would have lived happily if they had completed that journey. I do know that the Orpheus syndrome is precisely what we need to avoid in those who enter services for the blind. By all means, let them bring to the surface any charm or talent they may have but never see themselves as descending from superior regions upon the benighted blind. Before they even start, they must have a good look at their clients and continue to look because, in this journey, the only magic is understanding and communication.

At the other extreme, but equally obnoxious, is the Sampson syndrome. You remember how Sampson, after a dubious encounter with Delilah, lost his strength and his sight and was chained to a column and mocked by the Philistines. He prayed for revenge and when God gave back his strength, he pulled down the whole building, killing his persecutors, his friends and himself. I do not know how many Philistines there still are in work for the blind but certainly we can do without frustrated, blind Sampsons, whatever the source of their strength.

In an increasing number of countries, national systems of blind welfare are evolving that retain executive efficiency and accountability but with enhanced political awareness and an acceptable democratic and representational base. Orpheus would doubtless say they had surrendered Hades to the powers of darkness. Sampson would

think there are still far too many Philistines about. But to the majority on both sides of the issue, I believe it would be acceptable as a reasonable working compromise. From such a fusion of interest could come the energy for the next phase in work for the blind. It could be a phase beyond exclusion and participation, when we recognize that the need is for expansion on an unprecedented scale.

If such expansion is really to touch the need of the Third World, it must result from a global view of our task. It must confront the facts of world poverty. It must be big enough to think in continental terms, simple enough to understand the motivations and realities of life in an Asian village or African tribe. To anyone accustomed to the sophistication and resources of an advanced urban program, the task requires an adjustment of ideas and imagination. But, the gap should not be exaggerated. The transition is not beyond the scope of any competent professional in our field. Given common sense in its application, it is surprising how relevant much of our standard technology is.

Consider, for example, the educational predicament. Not one-tenth of the world's blind children are at school and their numbers are increasing by scores of thousands. The question is not whether we prefer residential schools or integrated programs, State or private initiatives, but how to multiply all these things within a minimal budget and to use every method, every resource, every policy that can give to a multitude of blind children an opportunity they must otherwise lack. But, are there not parallels here with the last 20 years in North America when, partly to deal with the crisis of retrolental fibroplasia, you elaborated a system of education unique in its expansion and diversity and yet with impressive continuity of tradition?

Orientation and mobility techniques are at least as relevant to an African village or a Malaysian jungle as to a New York street. If you lack electronic devices, a five-foot piece of bamboo makes a good long cane. A blind African farmer needs all the mobility he can get, if with his own hands, he is to build his village home, harvest his coconuts and coffee, and protect his cattle from raiding animals. A blind woman in a tribal village must often walk two miles from the well balancing a full water pot on her head, wash her clothes in a running stream, and cook on an open fire.

Look also at the employment problem. Throughout the developing world, the numbers of the unemployed blind are immense and economic conditions are adverse. We must exploit every professional skill we know, every resource, and every technique of production and placement. Most of the world's blind are village people and the emphasis must be on farming, food and cash crops, and rural markets. In towns there is opportunity for sheltered workshops but they are unlikely to receive any public subsidy. Industrial placement is possible so long as the blind can compete in an overcrowded labor market. Surely here again your experience is relevant. In North America you maintained employment for the blind through two depressions. You answered

intense competition by improved techniques of production and placement. You pioneered rural employment.

There are such parallels, but there are also dramatic differences in scale, in resources and in cultural expectations. Work for the blind is most urgently needed in the poorest communities where a sighted citizen is lucky if his annual income is \$80.00. The only technology that makes sense is one which fits this cultural and economic reality. If it is too complicated, too sophisticated, and/or too expensive, it will be self-defeating because it may postpone the achievement of something less elaborate but more practical.

But, the history of work for the blind is a story of international exchange of technology. To that exchange, you in North America have made decisive contributions in the work of organizations like Helen Keller International, CNIB, Perkins, The Hadley School, The John Milton Society and many others. Is it necessary, therefore, that we always draw this distinction between domestic and international programs? In the academic field American universities adopt and guide the development of colleges throughout the developing world. Could similar partnership arrangements be made where, in a systematic national program, any agency or institution for the blind that has relevant experience could sponsor and guide the development of an agency overseas? Planning, coordination, and financing would be necessary but you have well established mechanisms for this. Can any organization of the blind that invoked civil rights in the interest of the home blind fail to support international action based on considerations of universal human rights? An invaluable feature of American international aid is leadership training and personnel exchange. Could it become a recognized feature in the career structure of senior workers for the blind to spend a period of sponsored service overseas? Of course, to some extent, you are already doing this and one of my greatest professional privileges has been to work with American and Canadian colleagues in many parts of the world. What an impact some of them have made--Bob Jaekol and Jean Kenmore in Asia, Roy Kumpe in South America, Art McGill in Egypt, Dave Lawley in Trinidad, and Isabel Grant in Pakistan.

At the Geneva World Health Assembly in May, President Carter said, "I emphasize my commitment to basic human rights. To work toward those rights, we offer to share our knowhow with all nations regardless of politics or ideology. We will work together to raise the quality and production of life throughout the world." A similar idea was surely in the minds of those earlier Americans who, in those tremendous words, called not only to exiles and the politically oppressed, but also to the tired, the poor, "the huddled masses . . . the wretched refuse of your teeming shores." They also arranged that the most famous of public statues should hold aloft not a sword or a questionmark but a torch "whose flame is imprisoned lightning"--a prophetic vision, perhaps, of a shared humane technology.

DEVELOPMENT OF POLICIES IN THE UNITED STATES AND CANADA FOR SERVICES TO THE VISUALLY HANDICAPPED

Visual impairment is too widespread and has so many dimensions that services for this handicap cannot be left to philanthropy or ad hoc efforts. They must be integral parts of the established social services provided by governmental agencies at all levels, as well as by private organizations. The scope of services for the visually impaired is so broad that policies must be developed to assure the rational implementation and availability of the services to all those who need them. The five chapters in this section deal with various facets of the development of such policies. It should be noted that the Delaney article is a digest of a much more extensive report that was published elsewhere.

Some of the viewpoints expressed in the articles are not necessarily in harmony with others. However, tasks are ordinarily accomplished when they are approached with a spirit of eclecticism.

TOWARD AN ACCESSIBLE ENVIRONMENT: A REVIEW OF RECENT DEVELOPMENTS

by

Margaret Milner
Director of Programs
National Center for a Barrier Free Environment

Environmental accessibility is not a new idea. It is a goal that has been actively pursued by a number of organizations and individuals for two decades or more. Recent months, however, have seen an upsurge in public and institutional awareness of the need for accessibility that, combined with current federal policies and programs, has given the movement added momentum.

Wide public recognition has been achieved in large part as a result of media coverage of two recent events, the activities surrounding the signing of Section 504 regulations by HEW Secretary Joseph A. Califano, Jr., and the national focus provided by the White House Conference on Handicapped Individuals. Although both events had broader implications, it was clear that need to expand environmental accessibility was an underlying factor in many of the areas addressed.

When Secretary Califano issued the long-awaited regulation on April 28 this year, he said, "The 504 regulation attacks the discrimination, the demeaning practices and the injustices that have afflicted the nation's handicapped citizens . . . the 504 regulation will work fundamental changes in many facets of American life." And indeed, it already is working these changes. Despite the fact that the regulation does not require barrier-free environments in existing facilities if program accessibility can be achieved by other means, many institutions have begun to evaluate environmental accessibility and to think in long-range terms of eliminating existing barriers as well as meeting the requirement for making all new construction barrier free.

Among other stipulations, the regulation imposes the following requirements related to accessible environments on recipients of federal grants:

1. All new facilities must be barrier free--readily accessible to, and usable by, handicapped citizens.
2. Programs or activities in existing facilities must be made accessible to the handicapped within 60 days and, if no other alternatives such as reassignment of classes on college campuses will achieve program accessibility, structural changes in the facilities must be made within three years. No exception to the program accessibility requirements will be allowed.
3. Employers may not refuse to hire qualified handicapped persons, if reasonable accommodations such as removal of architectural barriers can be made.
4. Handicapped children must not be segregated in the public schools, but must be educated in regular classrooms to the maximum extent possible, with every handicapped child entitled to free public education regardless of the nature or severity of the handicap.

This regulation applies only to programs funded by the Department of Health, Education and Welfare, but will serve as a basis for similar regulations that will be issued by all other federal departments and agencies and will affect all recipients of federal funds.

Coupled with the previously-issued regulations for Section 503, which like 504 is a part of the Rehabilitation Act of 1973 (Public Law 93-112), this measure promises sweeping changes in educational and employment opportunities for all handicapped people with the removal of barriers a common theme in many aspects of the programs with an aim to provide equal opportunity.

The White House Conference recognized the link between the "life objectives" of independence, dignity and participation in community life, and the barrier free environment. In a recent news release summarizing the recommendations from the Conference, "an

accessible America" was cited as a prerequisite for realizing these objectives. Although the final report of the Conference and the implementation program were published only recently, the major themes emerging from the meeting that have impact are evident. Among these are recommendations for accessible transit systems and for professional education for architects, employers and service providers to train them to understand the full scope of accessibility.

Another interesting recommendation is the call for increased attention to the needs of persons with sensory impairments in developing accessibility standards--an area on which researchers are already focusing. Recently published design manuals reveal much greater sensitivity to these needs, and we can anticipate continued development in this field.

Although the 504 regulation and the White House Conference have been the events most widely-covered in the media, they are only part of the total activity. Both the Department of Transportation and the Department of Housing and Urban Development have taken significant steps toward assuring greater accessibility in these important sectors.

On May 19, 1977 Secretary of Transportation Brock Adams announced his decision to require all new public buses purchased with federal grants to be designed for easy access by elderly and handicapped persons, a decision that rescinded a previous ruling permitting less accessible vehicles. The new specification required for buses offered for bid after September 30, 1979, sets a floor height of not more than 22 inches capable of kneeling to 18 inches above the ground, and mandates that each bus be equipped with a ramp for boarding.

These specifications were originally recommended by the Transbus project. The policy decision mandating them was the final chapter in a story that goes back to 1971, when DOT began the Transbus program to develop a new bus that would be more accessible to elderly and handicapped passengers, as well as offering a quieter ride and reduced pollution.

The three major bus manufacturers, Flxible Company (a subsidiary of Rohr Industries), AM General and General Motors Corporation, participated in the \$27 million project, developing prototype vehicles that were tested in several cities for evaluation of transportation characteristics and consumer reactions. Based on these prototypes, the Transbus vehicle performance specification was developed.

In the earlier DOT ruling, issued on July 27, 1976, the Transbus specifications were disregarded and a required floor height for federally-financed buses was established at 29 inches, kneeling to 24 inches from the ground. The bus manufacturers also had to offer optional wheelchair lifts or ramps, with transit authorities free to choose between purchasing buses with lifts or providing special services for elderly and handicapped passengers. This ruling will remain in force as interim policy until the effective date of the new specifications.

A court suit by a coalition of consumer groups was already under way to force the Transbus specifications when the new ruling was announced. Although DOT had successfully defended its policies in a number of earlier lawsuits brought by handicapped and elderly citizens, the Department recognized that bus manufacturers had stopped all serious efforts toward producing the Transbus in the absence of a federal mandate.

In announcing the decision, Secretary Adams noted, "It is now within our technological capability to insure that elderly and handicapped persons are accorded access to urban mass transit buses. This access is fundamental to the ability of such persons to lead independent and productive lives. We cannot deny them rights that so many others enjoy, when it is within our ability to accord them such rights."

With the Transbus decision announced just prior to the opening of the White House Conference, Housing and Urban Development Secretary Patricia Roberts Harris chose the conference to announce the establishment of a new Office of Independent Living for the Disabled within the department.

Affirming HUD's intention to make itself more aware of the housing and environmental needs of Americans with disabilities, Secretary Harris also announced several other actions that will provide more access to federal housing programs for people with disabilities. Five percent of all new family units constructed under Section 8 and public housing programs will be designed for use by the handicapped, and local communities will be urged to spend a larger share of their community development block grant funds to eliminate architectural barriers. Also, HUD will explore innovative approaches to develop alternative housing environments for the mentally disabled.

Congress too continues to be concerned with the need for accessibility. Recent legislation includes Section 2122 of the Tax Reform Act of 1976 (Public Law 94-455) that grants tax relief to businessmen who remove barriers to the handicapped. The section provides an elective current deduction for the removal of architectural and transportation barriers to the handicapped and elderly in any facility or public transportation vehicle owned or leased for use in a trade or business. The Act defines handicapped individuals to include deaf and blind persons.

The barrier removal must meet government standards in order to qualify for the maximum deduction of \$25,000 per taxpayer for any taxable year. The deduction is effective for taxable years beginning after December 31, 1976, and ending before January 1, 1980.

A number of bills relating to environmental barriers were introduced in the first session of the 95th Congress. One such bill, introduced in the Senate, would require polling and registration places for elections for federal office to be readily accessible to

physically handicapped individuals. This bill parallels a similar movement in a number of states to require accessible polling places and usable voting machines for disabled voters. Minnesota, Florida, Delaware, Louisiana and Alabama are among states that have recently passed or are considering such legislation.

The previous Congress enacted the first federal law requiring accessibility, The Architectural Barriers Act of 1968 (Public Law 90-480). Under this act, buildings and facilities constructed or leased with federal funds must be free of barriers. In 1976, amendments to the act were passed that greatly strengthened it as a force for insuring a barrier free environment.

The permissive language of the original act has been replaced by a clear statutory mandate to the federal agencies named as administrators to prescribe design standards for the construction and alteration of buildings and facilities within their respective jurisdictions. The amendments add the United States Postal Service to the agencies named as administrators in the original act--the Administrator of General Services and the Secretaries of Housing and Urban Development and of Defense, and require them to establish a system of continuing surveys and investigations to insure compliance with accessibility standards. The definition of "building" in the Act has been broadened to include all privately owned buildings leased to the government, including those buildings leased for public housing.

The new law requires that the Administrator of General Services report to Congress during the first week of January each year on his activities and those of other federal government components, including a report of any waivers issued during the preceding year. The amendments also give the Architectural and Transportation Barriers Compliance Board the new responsibility to report each year to the Public Works Committees of Congress on its activities and actions to insure compliance with the standards prescribed in the act.

The Compliance Board, established under Section 502 of the Rehabilitation Act of 1973, is evidencing increased activity. The Board has recently filed its first two citations enforcing the provisions of the 1968 Architectural Barriers Act. One citation alleged that the Union Station and Visitors Center in Washington, D.C. fails to comply with the required American National Standards Institute standard by the lack of a safe elevator to the lower track area, and that there are no auditory or tactile directions to level changes, assistance devices, or structures for use of the visually impaired.

The second citation was against the Social Security Administration's Southeastern Program Center in Birmingham, the largest office building in Alabama. The citation specifies 22 failures to comply with the law.

Both complaints were made following unsuccessful attempts at informal resolution. According to procedures, the next step in negotiations are hearings held before administrative law judges.

The pace of activity in working toward a barrier free environment clearly seems to be accelerating. A major factor has undoubtedly been the development of an activist posture by consumer organizations and their advocates. Their determination to participate in the mainstream of American life and their willingness to take their cases into the courts if necessary have been a potent force for change.

In a real sense, however, recent developments have been partly the culmination of previous years of effort. The climate of public awareness has been cultivated over a long period by numerous projects sponsored by public and private organizations and consumer groups. The history of the often-cited "ANSI Standard" is a case in point.

The development of the original American National Standards Institute A117.1, "Specifications for Making Buildings and Facilities Accessible to and Usable by the Physically Handicapped," was one of the pioneering projects in the accessibility movement. Sponsored by the President's Committee on Employment of the Handicapped and the National Easter Seal Society for Crippled Children and Adults, the ANSI standard, as it is generally known, was adopted in 1961 and became the basis for many of the building codes, regulations, and local, state and federal laws that have since been passed.

Over the years many agencies began to modify the basic ANSI specifications or develop their own criteria in response to changing standards in level and quality of accommodations that were considered appropriate. The ANSI standard was reissued in 1971 with minor revisions, but there was widespread opinion that the original standard was, in the words of a General Accounting Office study report issued in 1975, "an incomplete minimum standard."

Recognizing the need for major revisions and expansion, in June, 1974, the President's Committee and the Easter Seal Society joined forces with the Department of Housing and Urban Development to begin such a project. Syracuse University was awarded a HUD-funded research contract to develop a new standard and carry it through the ANSI process to adoption. The scope of the standard was to be broadened to include specifications for housing.

The final draft of the resulting document went through format revisions and was submitted later this year to the ANSI committee for consensus approval. The next step in the process is to submit the document to the American National Standards Institute for formal adoption.

The proposed new ANSI has been developed on the basis of extensive research on, and testing of, people with a variety of disabilities in the performance of a number of tasks. One of the most valuable aspects of the new standard will be its broader coverage

of the design needs of all disabilities, with much more emphasis on specifications to improve accessibility for those with sensory handicaps.

The original purpose of the first standard was two-fold, to (1) increase professional awareness of the design needs imposed by handicapping conditions, thus encouraging designers to accommodate those needs, and (2) develop public understanding of the problems of handicapped people. In addition to the continuing concern with the earlier goals, a major thrust of the new standard has been its potential value in bringing uniformity to the array of laws, codes and standards that have been developed over the years.

For those working most closely with designers and builders, the need for a uniform approach has become clear. Efforts to design a barrier free environment are frequently complicated by conflicting codes and regulations of local, state and national origin.

Realizing that these variations arose primarily out of dissatisfaction with the old ANSI standard, it is believed that the adoption of the new specifications will provide an opportunity to achieve uniformity. The many existing laws that specify compliance with the latest ANSI will automatically incorporate the new standard when it is adopted. Other legislative, code and regulatory bodies will be encouraged to bring their standards into conformity with the new ANSI, sixteen years after the first standard helped to set in motion the forces that led to the array of regulatory acts.

This move for uniformity will be one of the important future directions for the accessibility movement. A companion effort will be directed toward improving enforcement of architectural barriers laws at all levels. The role of local organizations in both of these efforts will be curcial. Strengthening and improving existing local ordinances and state legislation, particularly with regard to developing effective compliance techniques, will depend upon the continued and enlarged activities of local advocates.

Federal enforcement of the Architectural Barriers Act and the accessibility provisions of the Rehabilitation Act of 1973 also rely heavily on individual complaints about specific violations. Thus informing consumers of their rights under the law and the procedures to be followed in claiming those rights will be an essential element in translating recent progress into the reality of an accessible America.

SHIFTS IN FEDERAL POLICY

TOWARD BLINDNESS

by

John L. Duncan

Legislative Aide to the Sub-Committee
on Select Education, U.S. House of
Representatives - Chaired by Congressman
John Brademas

Federal policy toward blind persons, like Federal policy toward any other group of citizens, or on any issue, is rarely found in any comprehensive statement. Rather it can be gleaned only from a broad understanding of the intent of Congress in enacting legislation that influences their lives. Over the years, the intent of various pieces of legislation in vocational rehabilitation, disability insurance, Supplemental Security Income, social services and taxation imply the recognition that blindness is a severe disability. The disability imposes such an immense burden upon an individual's income and vocational potential that society should justifiably shoulder much of the financial costs of providing an adequate income to those who cannot work and providing opportunities for rehabilitation and employment training for those who can. This broad policy has continued unchanged since the passage of the Social Security and Vocational Rehabilitation Acts and is likely to remain into the foreseeable future.

Recently, however, we have witnessed a better awareness of the changing characteristics of the blind population that require important shifts in service delivery which determine how Federal policy is implemented, and a significant addendum to the policy itself. All these factors portend adjustments in the relationships between blind persons and the Federal government, society in general, and those in the blindness service professions in particular.

In an article in Blindness 1973, Dr. Arnall Patz, Professor of Ophthalmology at Johns Hopkins University and currently a member of the National Diabetes Advisory Board, delineated population characteristics that need to be better addressed by Federal policy toward the blind, specifically, the alarming increase in blindness associated with diabetes. Few rehabilitation centers can effectively cope with a client with the associated disabilities and blind diabetics themselves need better instruction in self-care techniques and in the use of special aids and appliances than they are currently likely to receive in many rehabilitation centers.

In addition, the major influence on the implementation of Federal policy toward blind persons continues to be the trend toward consolidation of State agencies for the blind either within another agency or in a large umbrella agency. Also there is a trend in the Congress toward enactment of broad human-service programs administered flexibly, without strong Federal guidelines, through increased authority at the State and local levels. Such legislation does not require special programs for the blind, and, therefore, blind persons and workers for the blind are challenged to become better organized at State and local levels to ensure the development and funding of programs for the blind.

As pointed out by the late Joseph Kohn in an article for Blindness 1973, "In the present climate of changing structure for service delivery . . . the entire system of serving blind people is receiving its strongest challenge since its beginnings." He added candidly that blindness programs face the danger of becoming the "last pig in the litter."

Trends change and consequently it is wise to keep in mind these words from Robert Frost, "Most of the change we think we see in life is due to truths being in and out of favor." The trend toward integrated service-delivery systems in which the blind client is merely one among many clients with different needs may be reversed, and the fashionable theory in public administration someday may return to the concept of special and separate agencies and programs for unique populations. But, it is unlikely that the trend--initiated by blind and other handicapped persons themselves--toward integration of the blind into all areas of society will be arrested.

These points lead to possibly the most important and fundamental shift in Federal policy toward blind persons, namely, the extension of Federal nondiscrimination laws to the handicapped. The promulgation on May 4, 1977 of regulations to implement Section 504 of the Rehabilitation Act of 1973 and the signing on October 13, 1976 of Public Law 94-488 prohibiting recipients of Federal revenue sharing funds from discriminating against the handicapped will eventually bring about better integration of blind persons into all Federally-supported programs and activities.

In the society of the near future, now inaugurated by Federal nondiscrimination policy, blind persons will receive specialized education within regular public classrooms; low vision care, orientation and mobility training and instruction in diabetic self-care techniques at community health centers; employment training in regular manpower training and apprenticeship programs; and employment in industry alongside the nondisabled.

As integration proceeds and blind persons are served equally as well by public education, employment training and social service programs as they are by separate centers and programs for the blind, the question, "Should a segregated service delivery system for the blind be retained if public services are required to provide--and,

indeed, are providing--equal treatment and services for the blind?" will likely be answered "no" by more political leaders. However, agencies and professionals in work for the blind can perpetuate themselves, I believe, through fulfilling a need that no other public agency is as yet capable of undertaking, that is, serving as ombudsmen and advocates for the blind before other public agencies.

Federal policy is opening this new opportunity for an advocacy system and perhaps, time will tell, is closing the door on the need for a separate and segregated service-delivery system for the blind.

SCIENCE, PUBLIC POLICY AND THE VISUALLY IMPAIRED

by

Dr. George G. Mallinson
Distinguished Professor of Education and
Science Education
Western Michigan University
Kalamazoo, Michigan 49008

Introduction

During the last decade, considerable attention has been paid to various types of inequities that have afflicted women, minorities and the handicapped. Obviously, this statement does not suggest that concern did not exist in previous decades. However, that earlier concern was expressed chiefly by groups with vested interests and by individuals and organizations whose objectives and programs were targetted at the inequities afflicting these groups. General public awareness and understanding of the implications of the inequities were not widespread. As a result, there was no discernible movement in government, Federal, state or local, to make a broad frontal attack on the problems. However, that broad frontal attack has now been initiated and has become part of public policy. Two questions may be raised at this time:

1. What was responsible for the development of public concern that is being translated into public policy?
2. Will that public policy be sustained?

The answer to the first question is complicated. Obviously, many persons and organizations have championed movements to remedy inequities within certain groups of the handicapped and their efforts have, to some extent, been successful. However, the generation of broad public concern, like the crash space program motivated by the launching of Sputnik, usually is associated with catastrophic events. One may postulate that the genesis of that public concern was the disenchantment with the engagement in Vietnam and the corollary race riots and unrest on college and university campuses. Some may suggest entirely different causes. However, it is significant to note that public concern as reflected in emerging public policy seems to be directed at the remediation of inequities without regard for their orientation to race, sex or handicaps. This point will be explored further in a later section.

The second question which inquires about a sustained public policy for the remediation of inequities or one that is ephemeral in nature is even more difficult to answer than the first. If indeed the principle to deal with inequities, whatever they may be, is retained, the chances for a sustained public policy are optimistic. However, if splinter groups form on the basis of race, sex or handicap and seek parochial advantage, then the chances are pessimistic. One may need only examine the growing movement of environmental management that ran headlong into the energy crisis. Many of those involved divided into two camps whose attitudes might be described as, "Give us a clean unsullied environment, and damned be energy" and contrarily "Give us energy, and damned be the environment." As a result, we have neither. Had the camps combined under the banner of total resource management, we might be on the way to have both.

But, the subject here deals with public policy for "mainstreaming" the visually impaired into scientific careers. Consequently, an examination will be made of the salient background events that led us to where we are now.

The Role of Legislation

Legislation for providing various types of assistance to the visually impaired dates back many years. It would not be possible in a report of this length to present an adequate chronology of the various Acts. One who wishes to gather complete detailed information would have the staggering task of reading all the issues of the Federal Register beginning with the first one in which information appeared about laws and regulations concerning the visually impaired. Since 1958, however, Washington Report published bimonthly by the American Foundation for the Blind has reported Congressional activity on legislation affecting the visually impaired and those who work with the visually impaired, as well as actions of Federal agencies in administering related programs. The Report is complemented by another publication of the American Foundation for the Blind entitled Weekly Summary that searches the Federal Register weekly for similar information. There are, of course, other publications that describe and summarize this legislation. Some of the benchmarks of these legislative efforts were reported in a paper prepared by Van Staveren¹ in 1976. An analysis of the legislation mentioned in the report indicates an evolution from assistance to the visually impaired that almost typified the charity level to the type that currently leads to what is known as "mainstreaming."

One of the earliest important Acts was passed in 1879 providing support for the American Printing House for the Blind that was founded

¹Van Staveren, Tony, "An Overview of Legislation Concerning the Blind." Unpublished paper prepared for the course Blind Rehabilitation 692--Dynamics of Blindness and Rehabilitation, Western Michigan University, Kalamazoo, Michigan 49008, November 2, 1976.

in 1858. Through this Act and subsequent amendments designed to promote the education of the blind, free instructional materials are provided for residential schools, state commissions for the blind that conduct educational programs, adult rehabilitation centers offering formal classes, and publicly supported schools offering courses for the blind. The original grant of \$10,000 annually has since escalated to about 2 million dollars a year. Additional support for education of the visually impaired was provided by the passage of the Pratt-Smoot Act in 1931 that provided funds to the Library of Congress for distribution of books to the visually impaired through regional libraries.

The Vocation Rehabilitation Act of 1920 that was buttressed by the permanent authorization of funds through the Social Security Act of 1935 and the establishment of the Office of Vocation Rehabilitation by the Barden-LaFollette Act of 1943 were important landmarks in fostering opportunities for the blind in the economic mainstream. The services provided vocational counseling for choosing appropriate employment, vocational training and placement services.

The Randolph-Sheppard Act of 1936 and subsequent amendments authorized the operation of vending stands--later expanded to include vending machines--in Federal buildings by the blind. Later, amendments also provided funds for assistance in obtaining new equipment, providing management services, and assuming a reasonable income to operators.

The Wagner-O'Day Act of 1938 and amendments to the Vocational Rehabilitation Act further extended employment opportunities by supporting the development of workshops in which the visually impaired could participate in gainful occupations. Particularly important, the Act stated that federal agencies were required to purchase certain articles manufactured in non-profit agencies for the blind that are incorporated under state law.

The legislation cited above is only a small proportion of that "on the books" and obviously cannot be considered representative. However, to some extent it does give some evidence of the spectrum of concerns for providing services for the visually impaired. It also indicates the evolution of attitude from charity, through educational opportunities, to gainful employment and as such it is a reflection of changes in public policy.

Some actions have occurred that may be considered setbacks to providing occupational opportunities for the visually impaired, one being the presidential veto in 1971 of an amendment to the Older Americans Act of 1975 that would have provided vocational rehabilitation services to the visually impaired. The Amendment is claimed to be motivated by the recognition that half the blind population was 65 years of age or older. The veto was apparently based on the fact that many visually impaired persons under the age of 65 were receiving benefits under the Social Security Act and all those 65 or over were eligible for benefits. Further, it was indicated that the job market

for visually impaired persons over 65 years of age was not bright. Whether the beliefs are true is a matter of question. However, current thinking about changes in the Act appears to be targetted on areas outside the labor market.

Despite all the legislation and efforts of public and private agencies to "mainstream" the visually impaired throughout the job market in occupations in which they can function effectively, the numbers of qualified persons with visual impairments employed in the scientific engineering and technological fields is only a small proportion of those who could function effectively. It is a sad fact that many high school and college counselors as well as rehabilitation counselors have little knowledge of job skills needed in various scientific, engineering and technological professions or the capabilities of visually-impaired persons to acquire these skills. Consequently, the attention of the visually impaired is directed toward the social sciences, psychology and education. Yet, the relatively extensive inroad of the visually impaired into successful employment in the data processing field is ample evidence that deterrents to participation in the scientific, engineering and technological fields are not justified. However, it should be noted that this inroad did not just happen. They were fostered by the interests of persons such as Sterling, Gildea and Hallenbeck. The stimuli to foster opportunities in other occupations within these fields have been spotty at best.

New Thrusts

Within the past few years there have been efforts, obviously still fledgling, to open careers in the scientific, engineering and technological fields to the visually impaired. The prestigious American Association for the Advancement of Science has established an Office of Opportunities in Science--Project on the Handicapped targetted mainly on three groups, the visually impaired; those with hearing disabilities; and the orthopedically handicapped. One publication entitled Barrier-Free Meetings: A Guide for Professional Associations² brings together information about planning for meetings so that persons with handicaps may participate. Although the information is nothing new to associations and persons involved in providing services to the handicapped, it is salutary in that it brought the problems to the attention of an audience that hitherto paid nodding deference to the situation much as an undertaker pays perfunctory respect to a corpse. However, there is some question with respect to how much the AAAS effort, has to this point, contributed to "mainstreaming" the visually impaired into scientific,

²Redden, Martha Ross; Fortunato-Schwandt, Wayne; and Brown, Janet Welsh, Barrier-Free Meetings: A Guide for Professional Associations. AAAS Publication No. 76-7, American Association for the Advancement of Science, 1515 Massachusetts Avenue, N.W., Washington, D.C. 20005, 1976. Pp. xiv + 73.

engineering and technological professions. At this stage of the game, it would be unreasonable to expect significant accomplishments with the latter objective although it is clear that the AAAS is attempting to gear itself to move in that direction.

In the public domain, one of the newest thrusts is the Science for the Handicapped Program of the National Science Foundation that was funded in the Congressional appropriation for the NSF for the first time in FY 77. The part of the legislation leading to the Science for the Handicapped Program is nebulous with respect to its objectives. However, the concern apparently arose when a delegation from organizations concerned with providing services for the handicapped went to the Senate Committee dealing with the FY 77 NSF appropriation and suggested that some funds be included to provide opportunities for entry or reentry of handicapped persons in scientific careers. The legislation included only a brief statement about the \$500,000 that was included for the program. It did little more than tell the National Science Foundation to "do something." The \$500,000 was sealed in Mandation Section 7, P.L. 94-747, National Science Foundation Authorization Act FY 1977 and signed on October 11, 1976. Suffice to say "projects were supported in the total amount of \$481,155, the largest being awarded to the American Foundation for the Blind for a study of blind people training or being trained in science fields." All this is "to the good" but an appropriation of \$500,000 for one fiscal year for projects to "mainstream" three groups of physically handicapped persons into scientific fields is pathetically inadequate. At the time of this writing, proposals for FY 78 have been reviewed for possible support with about the same amount of funding available.

In examining what is happening, there is little question that some persons, professionals and nonprofessionals recognize the justice of providing occupational opportunities for the physically handicapped in scientific fields. That recognition, however, has not radiated to a majority. One can hardly claim, therefore, that there is a definitive public policy for fostering "mainstreaming." That policy has still to be developed and implemented.

At this time, activities of the projects that have been approved for support by the National Science Foundation have just begun. How significant the results can and will be is a matter of question. A start has been made, even if trivial. Hopefully, the projects will be a seed for the development of viable public policy for providing opportunities for employment of the visually-impaired in scientific, engineering and technological fields.

REPORT OF THE MASSACHUSETTS COMMISSION FOR THE BLIND
NEEDS ASSESSMENT STUDY

by

Anne Marie Delaney
Formerly Research Director
Massachusetts Commission for the Blind

Introduction

The Massachusetts Commission for the Blind Needs Assessment Study was designed to provide comprehensive and valid documentation regarding the unmet needs of the registered blind population¹ in Massachusetts. Commissioner Marie Matava, who authorized the study, indicated that it was designed to produce relevant planning information, (1) for the decision makers of the Commission, and (2) for the directors of any public or private agencies committed to serving the blind in the Commonwealth. Consistent with this purpose, the final report of the project was written to be a viable tool for planning, not just a synthesis of data. For the administration, staff, and clients of the Commission, the 1977 Needs Assessment Study represents an initial phase in a long-range process designed to plan services on the basis of client needs rather than on organizational preferences. From the beginning, the process has been marked by consensus regarding fundamental assumptions and a commitment to use results to impact planning.

Before describing the study, some comments on the intangible realities that made this study possible seem appropriate. These include the philosophical agreement between the needs assessment and Commission staff, and the practical commitment on the part of the potential users of the results, i.e., the administrators and planners of the agency. Philosophical agreement refers to the common agreement on the fundamental assumptions on which the study was based. These assumptions include (1) a belief that unmet client needs did exist, (2) a conviction that the service delivery system was in need of

¹ 'Blind' means 'legal blindness,' a term that refers to a person whose central acuity does not exceed 20/200 in the better eye with correcting lenses or whose visual acuity is greater than 20/200 but is accompanied by a limitation in the field of vision such that the widest diameter of the visual field subtends an angle of no more than 20 degrees.

improvement and (3) perhaps, most importantly, a commitment to the theory that, ". . . social planning and resource allocation decisions should be responsive to the problems and needs of the population and that, when possible, these needs should be ascertained through an objective process."²

While agreement on basic assumptions might be viewed as one of the requisite conditions for a successful needs assessment study, explicit commitment to use the results is clearly another major determinant of success. The presence of these conditions in terms of the Massachusetts study ensured that the ultimate purpose would be achieved, i.e., that plans would be developed in response to empirical evidence regarding the real needs of the blind. In fact, future program plans indicate that this goal is already partially achieved as the types and scope of several regional programs reflect the priority of unmet needs documented in the needs assessment study. The implementation process is mentioned at the outset as this reflects the primary purpose of this needs assessment study, namely a planning-decision-making tool.

History of the Project

The planning period:

The plan was to complete the study in about one year's time, from January 1, 1976 through January 31, 1977. During the initial period, from January 1976 to May 1976, research efforts focused on the developing general plans, such as the budget and time schedule and completing preliminary tasks including the review of the literature and the construction of the interview schedule. In addition, an important activity in this phase involved identifying and contacting knowledgeable and experienced people.

Ideas were shared in personal interviews, during organized meetings, and by responses to questionnaires with approximately 20 professionals, including rehabilitation counselors, social workers, researchers and administrators. In this initial period, information was also obtained from responses to questionnaires from Vocational Rehabilitation Directors in other states and from directors of agencies serving the blind in Massachusetts.

Two other major contributors were the Planning Team of the Commission, and two Advisory Committees. An Internal Advisory Committee consisted of members of various departments within the Commission, and an External Advisory Committee consisted of consumers, providers of services, legislators, researchers, and representatives

²Warheit, George J.; Bell, Roger A. and Schwab, John J. Planning for Change: Needs Assessment Approaches (Rockville, Maryland: Alcohol, Drug Abuse, and Mental Health Administration, 1975), p. 4.

from various human service fields including special education, rehabilitation, mental health services, services for children, and the aging. Knowledge gained from all of these sources guided long-range planning and facilitated the accomplishment of immediate planning activities.

Major tasks of the planning period:

The major task of the planning period was the design of the research instruments. The preliminary preparations involved formulating a definition of need, compiling a list of relevant needs, developing an organizational framework, and selecting formats appropriate for personal interviews and a questionnaire.

An explicit organizational framework guided the transformation of the list of needs into a category system of needs. This system included two major sections. The first specified needs related to social integration. Together, these sections provide a comprehensive list of a range of needs from a basic human level to needs specific to the blind.

The following outline reflects the organizational framework for the design of this study:

WHAT BLIND PEOPLE NEED

A. SKILLS IN PERSONAL INDEPENDENCE

1. Activities of Daily Living
2. Use of Equipment
3. Personal and Social Development

B. OPPORTUNITIES FOR SOCIAL INTEGRATION

1. Employment
2. Recreation
3. Family Counseling
4. Health Care
5. Education
6. Transportation Services
7. Housing Services
8. Volunteer Services

C. POSSIBLE REASONS FOR UNMET NEED

1. Lack of Financial Resources
2. Insufficient Information

Format of the interview schedule:

The interview schedule consisted of four parts. Part I focuses on the client's perceptions of their own needs. Part II deals with problems clients have in using services. Questions in Part III elicit the client's evaluations of the unmet needs of the registered blind population throughout the state. The questions in Parts II and III appear also in the questionnaire sent to agency directors and other professionals. Part IV seeks background information about the clients.

A basic assumption underlying the interview schedule is that the needs of blind people are primarily the same as those experienced by the general population.

The design period:

The next phase of the project, the Design Period, lasted from mid May 1976 to the end of June 1976. Adhering to the time schedule during this stage proved to be challenging because reality was not always consistent with idealized plans. The major efforts of the design period involved the preparation and implementation of the pilot study in which approximately ninety personal interviews were conducted to test and evaluate the interview schedule for clients and the questionnaires for service providers and key informants. With effort, obstacles were overcome and the required tasks completed.

Data collection:

With the research instruments revised, the interviewers hired, and the data collection plan devised, gathering of data began on July 5, 1976. Approximately 1,100 personal interviews were conducted with clients during July, August, and September. In the latter part of September and throughout October, nearly 1,000 questionnaires were sent to service providers, consumer groups, and key informants. The professionals who were contacted as part of the 'key informant' group included ophthalmologists, optometrists, itinerant teachers, psychologists, psychiatrists, and employees of the agency.

Analysis of the data:

After collecting the data, the needs assessment staff was faced with analyzing the responses and presenting the results in a form relevant for planning purposes. The following outline served as a guide in analyzing the client responses for each need category:

FORMAT FOR ANALYSIS OF CLIENT RESPONSES

- A. Estimate of State-Wide Need
- B. Regional Analysis of General Need
- C. State-Wide Need Related to Specific Items in the Need Category
- D. Analysis of the Relationship between Need and Client Characteristics
- E. Summary of the Extent of Unmet Need

Utilization period:

With the completion of the study, the most critical phase of the project emerged, namely, the utilization period. At this time, the Commissioner, the In-Service Training Director, and the Research Consultant cooperated in an effort to promote the utilization of the needs assessment data for planning. The research consultant developed three conferences for the Commission's Planning Team. The conferences focused on the "Purpose of Needs Assessment," the "Types of Needs Assessment Approaches," and the "Implications of the Commission for the Blind Needs Assessment Results," Participation in these conferences provided a real opportunity for the accomplishment of the purpose of needs assessment which is to implement the planning process. With the understanding and knowledge gained during these conferences, members of the planning team were better able to interpret and effectively use the data from the study to develop budgets, set priorities, and plan needed services for the coming fiscal year.

Sampling the client population:

The sample of 1,050 clients was selected by means of a stratified random sampling technique. This procedure involved (1) identifying the total number of registered clients; (2) determining the exact age of each registered client; and (3) defining the specific region in which each person lived. On the basis of this information, the population was then categorized in six specific age groups and by seven regions. The total number of persons in each age of the forty-two (42) sampling units was then determined.

A weight factor was assigned to each subject chosen for the sample. This weight factor, K , was derived by dividing the total number in each sampling unit by 25. A random number table was used to select the first case (c) in each sampling unit (a specific age group in a region). Then, the c and K^{th} , c and $2K^{\text{th}}$, c and $3K^{\text{th}}$ to

the c and 24Kth, cases were selected. Thus 25 cases were selected from each sampling unit.

The rationale for the weighting procedure was based on the administration's interest in the age distribution and regional location of the client population. The procedure allowed for sufficient representation in each age and regional group so that needs could be analyzed according to age distribution, regional location, or according to both classifications on a statewide basis.

Comparison of the actual and the estimated client population:

The number of subjects included in each sampling unit as well as the actual and estimated population figures appear in Table I that follows. In vertical order, the top number in each cell is the number in the sampling unit. The next figure is the weight factor, and the third figure reflects the estimated population total. Finally, the fourth number represents the actual population. There is close similarity between the sizes of the total estimated and actual populations. The former is 13,564 and the latter is 13,568.

Sampling directors of agencies serving the blind:

Two sources were used to develop a comprehensive list of relevant agency directors. The first consisted of specialized directories of agencies for the blind. The second source included human service directories that listed potentially relevant agency directors. Data concerning this sample appear in Table II that follows.

Sampling of 'key informants':

The term 'key informants' includes members of consumer groups, staff of the Commission for the Blind, and professionals from various fields including ophthalmology, optometry, education, psychiatry and psychology. The numbers in each category appear in Table III.

As indicated in Table III, 790 potential key informants were identified. A questionnaire was sent to each person. From this group, 282 completed questionnaires were received.

Description of the Client Population

Both planners and service providers need to know the clients they serve. Consequently, the Massachusetts Commission for the Blind needs Assessment Study documents both general and blind-specific characteristics of the client population. In this discussion answers

TABLE I

A COMPARISON OF ACTUAL AND ESTIMATED POPULATIONS

Region	Age Group						Total
	Birth to 15	16 to 24	25 to 44	45 to 64	65 to 74	75 & older	
I	25	25	26	24	25	25	150
	K=4	K=4	K=14	K=14	K=10	K=27	
	100	100	175	350	250	675	1650
	94	89	185	349	253	671	1641
II	24	25	25	25	24	27	149
	K=3	K=3	K=6	K=11	K=9	K=21	
	75	75	150	275	225	497	1297
	68	75	154	271	233	526	1327
III	25	23	24	26	25	25	148
	K=2	K=2	K=4	K=9	K=6	K=15	
	50	50	100	225	150	375	950
	62	62	92	215	156	382	969
IVA	25	28	24	26	25	24	151
	K=5	K=6	K=14	K=26	K=19	K=58	
	125	150	350	650	475	1450	3200
	125	161	352	639	470	1451	3198
IVB	25	22	26	25	24	26	148
	K=2	K=4	K=11	K=19	K=16	K=40	
	50	98	275	475	400	1058	2356
	61	103	281	481	404	1011	2341
IVC	26	25	25	26	23	26	150
	K=3	K=4	K=9	K=13	K=9	K=32	
	75	100	225	325	225	778	1728
	88	97	227	327	232	797	1768
V	24	27	24	26	25	25	151
	K=5	K=5	K=9	K=18	K=16	K=41	
	125	158	225	450	400	1025	2383
	132	115	214	438	400	1025	2324
Total							
Sample	174	175	174	178	171	178	1050
Est.Pop.							
Actual	600	731	1500	2750	2125	5858	13,564
Pop.							
	630	702	1505	2720	2148	5863	13,568

TABLE II

RESPONSE RATE FROM DIRECTORS OF
AGENCIES SERVING THE BLIND

Type of Agency	Number of Questionnaires Sent	Number of Questionnaires Received
Primary Agency Directors *	42	31
Secondary Agency Directors **	30	18
Total	72	49

* Agencies from the specialized directories were designated as 'primary agencies.'

** Agencies from the general human service directories have been defined as 'secondary agencies.'

TABLE III

RESPONSE RATE FROM KEY INFORMANTS

Key Informant Group	Number of Questionnaires Sent	Number of Questionnaires Received
Ophthalmologists	265	75
Optometrists	105	15
Itinerant Teachers	82	36
Psychiatrists and Psychologists	21	10
Members of Consumer Groups	90	24
Staff of the Commission	217	115
Recommended Professionals from Various Fields	10	7
Total	790	282

are given to questions such as "Where do most of the registered blind people live in Massachusetts?" "How old are most blind people in the state?" "Are there more blind men or women?" and "How many blind people live alone and do they have sufficient income to provide for themselves?" Tables III through XI summarize data relevant to these questions.

Tables XI through XIX deal with clients perceptions of their own needs and problems encountered with meeting those needs.

In summary, analyses of the perceptions of clients, service providers, and consumer representatives reveal evidence of similarities and differences in perceptions of service-related problems. While there is strong agreement with regard to the problem created by lack of information, there is considerable difference of opinion with respect to the prevalence of other problems. Clients are more concerned than other groups about the attitude of sighted people and the danger involved in travelling. In comparison with both clients and consumer representatives, a higher proportion of service providers claims that lack of interagency organization is a problem with the delivery of services. Consumer representatives differ from all respondents in terms of the percent who state that worker incompetence is an obstacle to the utilization of services. Finally, a high proportion of most respondent groups cite lack of information and lack of interagency organization as current problems with the delivery of services.

Summary of Perceptions of High Unmet Needs

Clients, service providers, and consumer representatives also shared their opinions about the types and the extent of the unmet needs of the blind population in Massachusetts. Table XX that follows displays the percent in each respondent group that claimed the blind have a high unmet need for a specific service. The rank order is based on the proportion of respondents who reported a specific item as a high need.

In describing the needs of the blind population, a large percentage of the clients emphasize the need for transportation services, employment services and daily living services. These priorities of need are shared by the Commission staff and consumer representatives. Although many professionals emphasize the need for employment and daily living services, they differ from clients in their high estimate of the need for counseling services. Finally, agency directors also perceive a high need for employment services and daily living services. In contrast to other groups, a large percentage of the directors estimate a high need for housing.

TABLE IV
AGE DISTRIBUTION OF THE CLIENT POPULATION

Age Category	Estimated Number of Clients	Percent of the Population
Birth to 15	600	4.4%
16 to 24	731	5.4%
25 to 44	1500	11.0%
45 to 64	2750	20.3%
65 to 74	2125	15.7%
75 & older	5858	43.2%
Total	13,564	100%

TABLE V
SEX DISTRIBUTION OF THE CLIENT POPULATION

Number and Percentage of Men	Number and Percentage of Women	Total
5,756	7,808	13,564
42.4%	57.6%	100%

TABLE VI
CLIENT POPULATION ACCORDING TO AGE AND SEX

Age Group	Number and Percentage of Men	Number and Percentage of Women	Total
Birth to 15	333 55.5%	267 44.5%	600 100%
16 to 24	414 56.6%	317 43.4%	731 100%
25 to 44	883 58.9%	617 41.1%	1500 100%
45 to 64	1389 50.5%	1361 49.5%	2750 100%
65 to 74	810 38.1%	1315 61.9%	2125 100%
75 and Older	1927 32.9%	3931 67.1%	5858 100%
Total	5,756	7,808	13,564

TABLE VII
ANNUAL INCOME OF THE CLIENT POPULATION

Family Income	Number of Clients	Percent of the Client Population
\$15,000 and over	591	5.2%
10,000 to 15,000	1245	10.9%
6,000 to 10,000	1707	14.9%
3,000 to 6,000	4210	36.8%
Less than \$3,000	3670	32.2%
Total	11,423	100%

TABLE VIII

RACIAL BACKGROUND OF THE CLIENT POPULATION

Racial Background	Number of Clients	Percent of the Client Population
White	12,437	92.2%
Black	631	4.7%
Spanish-speaking	51	0.4%
Other	372	2.7%
Total	13,491	100.0%

TABLE IX

LEVEL OF EDUCATIONAL ATTAINMENT OF CLIENT POPULATION

Level of Educational Attainment	Estimated Number	Percent of the Client Population
No Formal Schooling	270	2.1%
Ungraded Programs	346	2.6%
Pre-School Programs	146	1.1%
Elementary School	3853	29.4%
Some High School	2446	18.7%
Completed High School	3519	26.9%
Some College	1077	8.2%
Completed College	858	6.5%
Graduate School	571	4.5%
Total	13,086	100.0%

TABLE X

FIVE MAJOR CAUSES OF BLINDNESS IN THE CLIENT POPULATION*

Cause	Estimated Number of Clients	Percent of the Client Population
Macular and Retinal Degeneration	3050	22.9%
Diabetic Retinopathy	1244	9.4%
Glaucoma	1152	8.7%
Cataract	738	5.5%
Retinitis Pigmentosa	736	5.5%
Total	6,920	52.0%

*These diagnoses describe the cause of blindness for over 50% of the client population.

TABLE XI

DEGREE OF VISION OF THE CLIENT POPULATION

Extent of Vision	Estimated Number of Clients	Percent of the Client Population
Nil	784	5.8%
Minimal Sight	3042	22.7%
1/200 to 9/200	1141	8.5%
10/200 to 19/200	2856	21.3%
20/200	4490	33.5%
Restricted Field	1043	7.7%
Homonymous Hemianopsia	65	0.5%
Total	13,421	100.0%

TABLE XII

CLIENTS' PERCEIVED NEED FOR DIFFERENT TYPES OF EQUIPMENT

Type of Equipment	Little or No Need	Some Need	High Need
Designed for the Blind	(8353) 61.6%	(2599) 19.2%	(2190)* 16.1%
Adapted for the Blind	(11152) 82.2%	(1243) 9.2%	(1103) 8.1%
Ordinary Equipment	(10956) 80.8%	(1724) 12.7%	(N=861) 6.3%

*The numbers in parentheses indicate the estimated numbers of people who need this service. The percents represent the proportion of the total estimated population, 13,564.

TABLE XIII

PROBLEMS WITH THE PUBLIC TRANSPORTATION SYSTEM
ACCORDING TO RANK ORDER

Rank	Type of Problem	Estimated Number of Clients Who Experience This Problem
1	No Public Transportation Available	670
2	Scheduling Problems	481
3	Inaccessible System	408
4	Inability to Travel Alone	333
5	Difficulty with Stairs	329
6	Mobility Problems	275
7	Difficulty Reading Signs	251
8	Routes not Convenient to Destination	198
9	Prohibitive Cost	141
10	Lack of Information Regarding Schedules	97
11	Difficulty in Not Knowing When to Get Off	61
12	Other Problems Not Specified	463
	Total	N=3,707

TABLE XIV

CLIENTS' PERCEPTION OF THEIR NEED FOR
SPECIFIC VOLUNTEER SERVICES

Type of Service	No	Yes	Don't Know No Opinion Missing Data	Total Population
Volunteer Driver	(1262) 9.3%	(3311) 24.4%	(8991) 66.3%	(13564) 100%
Volunteer Shopper	(2261) 16.7%	(2290) 16.9%	(9013) 66.4%	(13564) 100%
Volunteer Reader	(2688) 19.8%	(1980) 14.6%	(8896) 65.6%	(13564) 100%
Volunteer Visitor	(2654) 19.6%	(1674) 12.3%	(9236) 68.1%	(13564) 100%

TABLE XV

PRIORITY OF NEED FOR SPECIFIC DAILY LIVING SERVICES

Type of Need	Number of Clients in Need	Percent of the Client Population
1. New Techniques for Independent Living	2596	19.1%
2. Mobility Training	1414	10.4%
3. Help with Shopping	1334	9.8%
4. Consumer Education	931	6.9%
5. Assistance with Meal Preparation	896	6.6%
6. Prepared Meals in the Home	845	6.2%
7. Help with the Budget	800	5.9%
8. Help with the Housekeeping	671	4.9%

TABLE XVI
NEED FOR SPECIFIC RECREATIONAL ACTIVITIES

Types of Activity	Estimated Number of Clients in Need
Sports Activities	1672
Cultural Events	645
Other Recreational Activities	1608
Unspecified Recreational Activities	761
Total	4,686

TABLE XVII
NEED FOR THE SERVICES OF SPECIFIC HEALTH
CARE PROFESSIONALS

Health Care Professionals	Estimated Number of Clients in Need	Percent of the Client Population
Medical Doctor	1358	10.0%
Dentist	1345	9.9%
Ophthalmologist	1057	7.8%
Optometrist	713	5.3%
Visiting Nurse	552	4.1%
Eye Surgeon	501	3.7%
Rehabilitation Doctor	315	2.3%

TABLE XVIII

CLIENTS' PERCEPTION OF THEIR OWN NEEDS

Need	Estimated Number of Clients in Need	Percent of the Client Population
Equipment Designed for the Blind	4789*	35.3%
Transportation Services	4777	35.2%
Volunteer Services	3628	26.8%
Recreational Services	2932	21.8%
Daily Living Services	2893	21.3%
Health Care Services	2857	21.1%
Equipment Training	2587	19.1%
Ordinary Equipment	2585	19.0%
Adapted Equipment	2346	17.3%
Educational Services	2169	16.0%
Employment Services	2120	15.6%
Housing	1777	13.1%
Personal Counseling	1242	9.1%
Family Counseling	980	7.2%

* This table was formed by combining "some" and "high" need categories and including these responses as affirmative responses to this question.

TABLE XIX
EVALUATION OF PROBLEMS IN USING SERVICES*

Problem	Respondent Clients		Group Professionals		Commission Employees		Agency Directors		Consumer Representatives	
	Rank		Rank		Rank		Rank		Rank	
Lack of Information	1 or 2	(5718) 43.4%	1	(100) 86.2%	1	(86) 84.3%	1	(30) 88.2%	1	(20) 90.9%
Attitude of Sighted People	1 or 2	(5669) 43.4%	5	(62) 59.0%	5	(60) 61.9%	2	(30) 83.3%	8	(11) 50.0%
Dangerous Travel	3	(3924) 32.5%	7	(29) 40.3%	9	(39) 41.9%	9	(8) 33.3%	6	(11) 61.1%
Social Stigma in Using State's Services	4	(3703) 32.4%	9	(33) 35.5%	8	(34) 37.8%	8	(11) 42.3%	9	(8) 44.4%
Lack of Interagency Organization	5	(2985) 30.6%	3	(57) 72.2%	3	(63) 69.2%	3	(17) 65.4%	3 or 4	(13) 76.5%
Inconvenient Transportation	6	(3394) 30.3%	2	(60) 74.1%	2	(68) 78.2%	4 or 5	(18) 62.1%	3 or 4	(13) 76.5%
Worker Incompetence	7	(3109) 25.9%	4	(66) 68.8%	6	(48) 57.8%	4 or 5	(18) 62.1%	2	(14) 77.8%
Contacting Personnel	8	(2867) 23.6%	6	(42) 46.7%	4	(63) 67.0%	7	(15) 51.7%	7	(11) 52.4%
Attitude of Service Providers	9	(1845) 15.4%	8	(32) 37.6%	7	(36) 42.9%	6	(14) 53.3%	5	(12) 63.2%
Total		13,214		481		497		163		113

*The number of individuals responding appears in parentheses above the percentages.

TABLE XX
SUMMARY OF PERCEPTIONS OF HIGH UNMET NEED

	Clients		Professionals		Commission Staff		Agency Directors		Consumer Representative	
	Rank	%	Rank	%	Rank	%	Rank	%	Rank	%
Transportation	1	66.6%	5	49.0%	3	57.4%	4	64.5%	2	81.0%
Employment	2	65.0%	1	61.8%	1	72.5%	1	85.7%	1	85.7%
Daily Living Services	3	62.8%	3	56.1%	2	62.2%	2	69.4%	3	72.7%
Financial Assistance	4	61.4%	8	37.2%	11	37.2%	12	28.6%	13	33.3%
Health Care	5	57.3%	13	29.7%	7	47.4%	11	33.3%	12	38.1%
Housing	6	56.2%	10	34.1%	8	45.8%	3	69.2%	11	40.0%
Equipment	7	55.5%	11	31.9%	12	27.5%	10	41.9%	9	47.6%
Volunteer Services	8	54.9%	12	31.0%	10	37.6%	7	48.4%	8	52.4%
Education	9	54.8%	7	40.7%	9	43.0%	9	46.9%	6	55.0%
Recreation	10	49.5%	6	45.5%	6	48.0%	6	51.7%	4	61.9%
Counseling	11	42.6%	2	58.6%	5	54.0%	5	61.3%	5	61.9%
Legal Services	12	41.8%	9	34.9%	13	24.2%	13	25.0%	7	52.9%
Family Services	13	35.1%	4	55.3%	4	54.1%	8	48.4%	10	42.1%

*These percentages represent the proportion in each respondent group who estimated a "high" need.

Conclusion

In conclusion, responses from clients, service providers, and consumer representatives highlight four major issues related to the unmet needs of the blind population in Massachusetts. Three of these primary issues involve specific unmet needs including transportation, equipment designed for the blind, and employment services. The fourth issue refers to a problem with the delivery of services, that is, inadequate dissemination of information.

In each section of the survey, clients have expressed their concern with respect to transportation services. Approximately 35% of the client population believe that they are personally in need of additional transportation services. Almost the same proportion, 32.5%, claim that dangerous travel is presently an obstacle to the use of services and 66% report that transportation is a high unmet need of the blind population in Massachusetts.

Two other high priority needs are equipment designed for the blind and employment services. Based on client responses, an estimated 35.3% of the clients have some need or a high need for specialized equipment. Clients give primary emphasis to specialized equipment in their discussion of their own needs. However, in estimating the needs of other blind people, the clients attribute higher priority to the need for employment services. Sixty-five (65) percent of the client population believe that this is a "high" unmet need of the blind population in general. Their views are strongly supported by service providers and consumers.

Evidence from this study also reveals another critical need, more general than those previously mentioned, namely, the need to improve sharing of information. Clients, service providers, and consumer representatives agree that this is the primary problem with the delivery of services.

In presenting the final report of the project, it was the intention of the research director and staff to respond indirectly to client needs by facilitating the tasks of the policy makers and service providers whose responsibilities are to design programs that will meet these needs. Only with these plans and programs in process will the purpose and potential of this needs assessment study be fulfilled.

Now that we know, in a general way, who the blind people are, we are ready to address the question, "What do they need?" As previously noted, the answer to this question is based primarily on clients' perceptions of their own needs and, secondarily, on the perceptions of professionals and service providers.

In terms of the content of the discussion, the needs covered include basic human needs, human service needs, and needs specific

to blindness. Within the context of this study, these needs are viewed in relation to Personal Independence and Social Integration. The former category includes activities of daily living, equipment, personal counseling, and job seeking and job performance. The second major category involving Opportunities for Social Integration, refers to needs such as employment, recreation, family counseling, health care, education, transportation, housing, and volunteer services.

A CNIB VIEW OF AAWB

by

W. E. Milton
Assistant Managing Director
Professional Development and Client Services
The Canadian National Institute for the Blind
Toronto, Canada

Thank you for the invitation to participate in this Panel this afternoon and to present some views of the Canadian Network Institute for the Blind (CNIB) concerning the American Association of Workers for the Blind (AAWB). Our Managing Director, Mr. R. C. Purse, to whom the invitation was originally extended, was regrettably not able to accept because of commitments that prevented him from attending the Convention this year. It is a pleasure and an honor for me to represent him, to bring you his greetings and best wishes, and to incorporate his thinking in these remarks.

Let me say first that CNIB has always regarded AAWB as a viable organization. The long history of our participation in the affairs of this association, reaching back to our own beginnings at the end of World War I, amply support this claim. Indeed, our first Director, Charles W. Holmes, received the Ambrose M. Shotwell Memorial Award as early as 1919.

When Colonel E. A. Baker, one of the founders of CNIB, became its Executive Head in 1920, a post he continued to occupy with forceful leadership until his retirement in 1962, he and the handful of pioneers who took part in our early programming were quick to recognize the mutual advantages of continuing and strengthening CNIB--AAWB relationships. They and their colleagues were soon active on the AAWB Board and its Committees contributing their expertise and working shoulder to shoulder with outstanding Americans of their day.

As time went on blind Canadians took their places in the President's Chair with Colonel Baker serving as the first Canadian President of AAWB in 1937 when the Convention was held in Toronto. In the early 1950's the spotlight focused on Arthur V. Weir, CNIB's General Manager for forty years until his retirement in 1964. Sighted himself, Mr. Weir had a deep regard for his blind colleagues and stepped aside in favour of Captain M. C. Robinson, then CNIB National Director for Western Canada, whose presidency culminated in the 1955 AAWB Convention in picturesque old Quebec City which many of you will remember.

In 1968, the year of CNIB's Golden Jubilee, the presidency once more came to Canada. Many of you will remember Arthur N. Magill, then Managing Director. As President, he hosted the Convention in Toronto, the seat of our National Office, and made the event a major project in our fiftieth anniversary celebrations. Mr. Magill, in 1971, as well as Colonel Baker some twenty years earlier, were also recipients of the Ambrose M. Shotwell Award.

My own association with AAWB began in 1950. It has been my privilege, in the past 27 years, to attend most of the Conventions, to serve on many Committees as well as on the Board of Directors from 1963 to 1966 and to witness considerable growth and expansion.

Our present Managing Director, Mr. Purse, also began his association with AAWB in the early 1950's. In the intervening years he has been deeply involved in Committee work and has served two terms on the Board of Directors including holding the office of Secretary from 1973 to 1975.

Many other CNIB professionals have been involved, of course, in AAWB Committee work, have held offices in the various interest groups and have participated in Conventions. They will be known personally to many of you.

This brief historical review has been presented primarily to acquaint newer members with the longstanding and close relationship which has existed between AAWB and CNIB. It will, I think, also form a background against which a few thoughts appropriate to these changing times can be expressed.

One of the very significant changes which, in our view, has greatly strengthened AAWB on the American scene, was the move some ten years ago to regionalization. The development of regional groups from coast to coast has effectively broadened the membership base and provided channels for needed grass-roots representation. On behalf of CNIB I should like to congratulate those forward-looking people who perceived the need and devised the plan as well as those who have built the groups to their present strength.

In Canada, AAWB has always been an important aid to CNIB thinking and programming. We have regarded it, and continue to regard it, as a major source of new ideas, a forum for debating development of services, and a meeting place where our professional workers can exchange views with their American counterparts. Since CNIB is the only National service agency for blind people in Canada, without AAWB our professionals would be talking to themselves. We therefore continue to have a very high regard for the influence of AAWB.

The 1970's, however, have been a time of great social change. Traditional approaches have been and are being challenged. There is renewed emphasis on rights, self-help and advocacy. Consumerism is an important factor to be taken into account in programming on both sides of our common border. No doubt you will be moving, through

your regions, to help your member agencies strengthen their roles in this area just as we are working through our divisions to meet our needs in this regard. I can assure you that we will be watching your developments with interest and hope there will be opportunities for mutual sharing and gain.

Inevitably, there will be variations in our approaches based on the need to adapt our respective methods and style to the differences in our political and organizational structures. While these differences have always existed, today's pressures are causing our traditional relationship with AAWB to enter a new and perhaps a more realistic phase. We see our involvement continuing at the interest groups level where ideas and information are generated and exchanged, where personal contacts are made among people with similar concerns and expertise, and where there is opportunity both to contribute and to learn. We will continue to stand ready, also, to share Canadian experience and opinion through participation in Convention programs. At this Convention, for example, Miss Louise D. Cowan, our National Coordinating Consultant for Social Services and Rehabilitation Teaching is giving a paper on Vision Canada, the report of the Evaluative Study of the Unmet Needs of Blind Canadians that was published last year.

Historically, there has been an unwritten understanding that CNIB should have a seat on the Board of Directors of AAWB and that the Presidency and the Convention should move to Canada every few years. I should explain that the basic reason for this arrangement was that almost the entire Canadian membership in AAWB, which used to be considerable, was comprised of CNIB staff. Our agency paid all membership fees and all travel expenses to Committee and Board meetings between Conventions as well as to the Conventions themselves. The costs were substantial and, of course, we are accountable as you are to our public, our governments and our consumers. We therefore needed to maintain a reasonable degree of visibility on the Canadian scene to support this financial involvement. Everyone recognized that this was necessary and that this arrangement provided constructive public relations for both CNIB and blind Canadians.

When AAWB was small, a Canadian on the Board or as President could make a worthwhile contribution. However, times have changed and one Canadian on the very greatly enlarged Board is, in effect, token representation. He is not close enough to United States problems to make a meaningful contribution and I am sure you will agree that there is really little point in placing Canadian problems on the agenda. If this were done, many Board members would find themselves with insufficient knowledge of Canadian affairs to be able to deal with them satisfactorily.

Similarly, it would be inappropriate for an agency in one country to make representations to the government of another. Each must develop and pursue its advocacy role in the light of the needs and conditions existing locally while utilizing whatever may be applicable from the experience and successes of others. Unlike the

World Council for the Welfare of the Blind where the agenda focuses on international concerns and where representation is by national delegations based on population, CNIB participation in AAWB is really that of a neighbour enjoying associate-type membership in an essentially national organization whose other constituents share common social, cultural and political ties.

The question of Canada becoming a region of AAWB has been carefully examined on more than one occasion. However, this too, will be seen to be inappropriate when it is remembered that Canada is a nation and that CNIB is a national, private, voluntary organization, not a State or local agency. In serving blind Canadians and those threatened with blindness, CNIB must deal, through its national, regional and local offices, with federal, provincial and municipal governments, and derive funds from these sources as well as from national corporations, local United Appeals and the public generally. We are, therefore, responsible to the people and governments of our country.

It will be obvious, I am sure, that CNIB is not suggesting that AAWB change its structure. Indeed, in our view, through regionalization and the broader representation it affords, you have found the right way of meeting your very complex needs in your very large and diverse society. We believe we have much in common with you and that we can and should work together in meeting our respective challenges and commitments.

Among the common interests we share are the concerns we all have for effectively involving our consumers, for improving communications with them, for identifying and filling unmet needs, for improving advocacy and public education, for preventing blindness. In short, the full range of concerns, new and old, which are represented by the areas covered in the interest group structure of AAWB constitutes the shopping list. The challenge facing all of us, particularly those of us who are administrators, is to establish the priorities and find the resources.

The invitation to take part in this Panel suggested that this session would be taking a look at AAWB itself. I have had to do this from our rather unique position as a member from another country. Let me say, however, that we like what you have and what we see you doing. We have nothing comparable in Canada and we do not have the conditions for creating it.

AAWB brings together a multitude of people from a wide variety of different disciplines, interests and concerns. You are a mixture of public and private agencies of professionals and volunteers. You have a long and distinguished history of accomplishments in which we have been proud to play a part. I am sure you have an equally bright and promising future. That, of course, can only be the case if the membership wants it so and is willing to work together to make it happen.

In conclusion, let me say again, that, while CNIB does not feel that it has the knowledge or the justification for acquiring it, to function at the leadership level of today's more complex AAWB, it does want to continue to participate at the working level. We feel there is value in contributing our ideas, in learning yours, in examining our common strengths and weaknesses, and in moving together towards meeting the needs of blind people throughout North America. We hope in this way to be able to continue to make an effective contribution.

CHANGING POPULATIONS OF THE BLIND

The four papers that follow deal with different facets of the changing blind population. The first paper by Scholl deals with the changing population of blind children with emphasis on the educational implications. Russell's paper is concerned with the geriatric blind whose numbers are increasing because of greater longevity. Magers discusses the implications of the changing blind population on the work force--a bridge between children and the geriatric society. The final paper by Ederer is a study of the changes that appear to have occurred in Framingham, Massachusetts. The study sought to measure the prevalence of four major eye diseases that are major causes of new blindness in the United States and determine the extent to which more than 100 heart variables may be associated with the risk of eye disease.

CHANGES IN THE POPULATION OF BLIND CHILDREN

by

Geraldine T. Scholl
The University of Michigan

Introduction

On a September day in the early 1940's the superintendent of a midwestern residential school for the blind sat in his office pondering the declining enrollments. The last student with the eye diagnosis of ophthalmia neonatorum would be graduating that year. The disease is commonly caused by gonococcus although other microorganisms may be responsible. She had acquired the condition through carelessness during a home delivery. Prophylactic treatment in the eyes of newborns, at that time with a silver nitrate solution, had reduced that cause of blindness which previously accounted for large numbers of congenitally blind children (Merry, 1933). Through efforts of the National Society for the Prevention of Blindness, accidents and eye injuries, which had also accounted for a significant percentage of blindness in children, were likewise reduced (Merry, 1933). The midwestern residential school superintendent was not alone in his concern about the future of residential schools. His counterparts in other states also faced a reality problem of what to do with an expensive school plant and obligations to teachers and other employees. They

may even have wondered, fleetingly, about their own future professional careers.

In another part of the country, Dr. Edward Allen, Emeritus Director of what was then known as Perkins Institution and Massachusetts School for the Blind, was lecturing to the incoming group of students in the teacher training program, the "Harvard Class." His opening comments were: "You are entering a dying profession." He went on to explain that the numbers of blind children were being reduced drastically and during the next 25 years, he predicted, there would be a concomitant reduction in the number of teachers needed and, consequently, the ultimate demise of the teacher training program. After all, if there were no blind children, there would be no need for teachers.

Meanwhile, in another part of Boston, an ophthalmologist, Dr. T. L. Terry, pondered the possible cause for the increasing number of premature infants he was seeing whose vision, while seemingly normal at birth, became defective before the child reached the first birthday. It was a strange condition ; one which appeared to be a fibrous tumor behind the lens. Why should it appear in seemingly normal infants and in such increasing numbers of them? Neither Dr. Allen, nor the concerned residential school superintendents, nor Dr. Terry himself could have predicted at that moment in the early 1940's what was to happen to the school age population of visually handicapped children during the next thirty years.

The Impact of Retrolental Fibroplasia (RLF)

Most professionals in work for the blind know the outcome of Dr. Terry's discovery and the impact of increased numbers of children blind from the condition he named "retrolental fibroplasia (RLF)," an early description of the condition which later proved to be inaccurate. The culprit, the excessive use of oxygen with the premature infant, was discovered unfortunately after much damage was done. Now, far from being concerned about closing their schools, residential school superintendents were wondering how they would be able to educate the increased numbers of children. In the midwestern superintendent's school, within a short span of three years, the number of kindergartens grew from one, which was not usually completely filled, to four. Pressure on residential schools led to building programs to accommodate the increasing enrollments. Teachers were recruited from general education to teach the greater numbers of students.

There was another significant educational impact as well. Middle-class parents, whose children seemed particularly prone to develop retrolental fibroplasia, placed increasing pressure on public schools to educate their children in regular schools and consequently the number of day school programs burgeoned. The previous competition between residential and day schools for the

same pupils in a declining market began to disappear in some states and a new cooperative spirit appeared.

Teacher preparation programs, such as the "Harvard Class," could not meet the demands for qualified personnel. Increasing numbers of teachers from regular classes were recruited for both residential and day school programs, many of whom were provided with minimal in-service education. The need for college and university programs to prepare qualified professional personnel did not begin to be met until Federal funds became available in 1964. Today about 30 colleges and universities are preparing teachers of visually handicapped students with most programs being funded through the Bureau of Education for the Handicapped.

The impact of these increased numbers has now shifted to the rehabilitation and placement agencies as they swell the ranks of the employment age groups.

Selected Characteristics of the Current School Age Population

With the wave of retrolentals now through school, what are the characteristics of the population of children currently enrolled compared with those in the past? Children in programs in the 1970's do differ from those in the 40's and 50's. Some differences are related to their innate characteristics and others to external factors, including technology and developments in special education.

Data presented by Hatfield (1975) for selected years do not reflect the dramatic decline in the number of retrolentals. But, they do show the drop in causes due to venereal disease and to injuries. They also show the increases in rubella and prenatal influences. These trends can probably be expected to continue. Rubella is particularly significant for its impact on increased numbers of deaf-blind and multipli-impaired.

Educators of visually handicapped children today would probably say that one of the major differences between the current population and that in the past is the presence of disabilities other than blindness. We should be aware, however, that blind children with other disabilities have been with us for a long time. Merry (1933), Maxfield (1950), and Cutsforth (1951) described the educational problems and needs of visually handicapped children with other defects and supported the principle that frequently the "other" disability was a more significant factor in development and education than the visual impairment. All were concerned about the lack of adequate facilities especially for blind retarded pupils. In general, however, day and residential school teachers during the 1940's accepted many children with other disabilities, partly because they were not aware that they could not manage the problems presented by other disabilities. They did the best they could based on common sense.

It was not until the 1960's when special education became concerned with categories and specialization, that the hard line between the categories led teachers of one categorical group to refuse or feel incompetent to teach children who had more than one disability.

Children who could not be managed in either a day or a residential school were institutionalized with little thought about their future or their educational needs. It cannot be denied that the rubella epidemics of the mid-1960s, in addition to improved medical intervention techniques for prematures, have added greatly to this population of multipli-impaired. One wonders, however, whether increased attention has brought about a greater awareness of other impairments and that the proportional numbers today may not be very different from those in the past. In any event, we are more aware of the unique educational needs of such multiplihandicapped children and are attempting to meet those needs through improved educational procedures, particularly in early intervention programs (see, for example, Harley et al., 1977).

The equal rights movement is undoubtedly one of the forces behind the current interest in mainstreaming. Mainstreaming attempts to give access to educational opportunities in regular schools to handicapped children. Mainstreaming is not a new concept in the education of visually-handicapped children. In 1900 the first public school class for blind children was established in Chicago (Meyer, 1950). The movement was slow to grow, however, and in the 1940's only about eight percent of blind children were enrolled in public school programs. In the 1950's such programs were destined for a growth spurt partly due to pressures from parents who wished to have their RLF children educated in the public school setting and partly due to interest stimulated by the American Foundation for the Blind (AFB, 1954; AFB, 1956). Today, more than three-fourths of the visually-handicapped students are being educated in regular schools.

From the beginning, most day school classes were integrated, that is, visually-handicapped pupils spent varying portions of the school day in regular classes. In addition, full time enrollment in a regular class while receiving specialized help from an itinerant teacher has been common (AFB, 1956). Thus, "mainstreaming" is well accepted in our field. The current educational emphasis on mainstreaming may result in greater acceptance both in school and in the employment market.

Technology in the 1970's is having its influence on visually-handicapped school-age children, both on those with some useful vision and those who are totally blind.

In the 1940's teachers of visually-handicapped children blindfolded or used other techniques to assure that those with some vision would not use it, especially in reading braille. It was not unknown for students to graduate from high school able to read braille by sight but not print because no one had taught them print letters. Fortunately, through advances in ophthalmological research and the

development of low vision aids, more and more visually-handicapped children with relatively low vision are able to read print effectively. Instead of being discouraged from using their vision, today's children are encouraged to develop and, more importantly, are given training in, visual efficiency (Barraga, 1964). In addition, the number and variety of low visual aids have increased so that with such aids teachers and parents encourage children to use what vision they have. Tactile media, such as braille, are employed when it appears that the child's vision is so defective that he will not be able, even with the maximum magnification, to become an effective print reader. Through these developments and changes in teaching practices more and more of today's visually-handicapped children are being pushed toward normalcy in visual functioning. The label "blind" is not appropriate for increasing numbers in the school-age population, thanks to technology and educational practices and materials that emphasize maximum visual functioning.

For those whose vision is so defective that they cannot use visual media for reading, technology has made available such devices as the Optacon and the Kurzweil Reading Machine. While many educators were skeptical at first, through encouragement from the Bureau of Education for the Handicapped, more school-age children will have access to the printed word by using Optacons. University personnel are being trained to prepare teachers who will, in turn, teach students to use the device. Optacons will be available on loan through state instructional media centers to visually-handicapped students trained under this program. Neither the Optacon nor the Kurzweil Reading Machine will replace braille as the sole medium for written communication but both can provide blind persons with immediate access to the printed page, an essential skill for employment for many adults.

The electronic calculator that provides either auditory or braille feedback is another valuable addition to school programs. Mastering mathematics has always been a challenge to visually handicapped students because they lacked a way of performing and monitoring calculations. The electronic calculator with feedback provides such a means and should be exploited to a much greater extent as a teaching technique. Its use will enable increasing numbers of visually-handicapped students to compete with normal children in performing mathematical computations.

Mobility aids are a necessity for giving visually-handicapped persons freedom to move about in their environment. Again technology is providing more efficient and effective tools. The Sonicguide as a mobility device for adults is finding its way into educational programs for children not so much as a mobility device but as a means of expanding their access to the object world (Newcomer, 1977). Other electronic aids are likewise being used as teaching tools (Baird, 1977).

In summary, technological aids are providing increasing access to more aspects of daily life than before. With effective use of such aids, visually-handicapped children can be expected to take

their places beside normal children in the competitive atmosphere of the regular school so that they are better prepared to assume adult roles in an increasingly complex world. Technology is providing tools and devices that improve the educational process and that were beyond the wildest dreams of teachers of the visually handicapped in the 1940's.

The Future

Could the residential school superintendents, the teacher trainer or the ophthalmologist of the 1940's have predicted the characteristics of the school-age visually-handicapped population of the 1970's? Probably not. Neither is it likely that we can project into the future accurately the characteristics of the school-age visually-handicapped population in the year 2000. Based on current trends, however, we may engage in a little speculation. The problem lies in not knowing what new cause of blindness may be on the horizon, what new technology is about to be developed or what educational development may modify the current public school setting. Let us examine selected aspects in these three areas.

Retrolental fibroplasia is still with us. With the increasing partnership between physicians and patients growing out of possible malpractice actions, difficult medical decisions will, in the future, involve the patient. With prematures, the critical problem is to administer an amount of oxygen which will not damage the visual sensory system but which will maintain brain cells so that brain damage and possible mental retardation will not result. Parents may be asked to make the decision whether oxygen should be increased to maintain life for brain cells with the possibility of damaging the visual system. This is a difficult choice.

Another factor in future causes of visual impairments is genetic damage from substance abuse. It may be many years before the results of substance abuse on the next generation are evident. More than one half of childhood blindness is attributed to conditions that are genetic in origin (Zimmerman, 1977). While hereditary causes of blindness are known and genetic counseling is readily available, a critical issue is whether encouragement to obtain genetic counseling infringes on one's individual rights. Prospective parents with hereditary causes of blindness may choose to risk having a child in spite of knowing that there is a good chance it may be blind (Carpenter, 1977). Should parents have such rights? Many genetic defects are detectable during the prenatal period. Should tests for such conditions be required and more importantly, should parents have the right to decide whether or not to continue a pregnancy that will produce a handicapped child?

Advances in technology will probably be one of the most important factors in the life, development and education of visually-handicapped school-age children. We are on the threshold of applying

technology to the educational process. Where will it lead? Will tomorrow's visually-handicapped children arrive at school equipped with a variety of technological aids that will enable them to maximize available sensory abilities and minimize visual deficiency? The use of such aids as well as increased attention to training in visual efficiency and sensory discrimination may help them participate more fully in the regular school program. Technology will facilitate their education.

The current emphasis on mainstreaming in special education holds some potential dangers. We are at a crossroads. One philosophical position leads to the conclusion that there should be no difference in the educational program for the handicapped child compared with that for the normal child. For our field, this position denies that there are unique needs, such as orientation and mobility skills, which should be an essential part of the educational program. The other position recognizes the need for providing the specialized services that will meet the unique needs of all handicapped children and enable them to take their place in an adult society. This latter position is based on our long history in day and residential programs for visually-handicapped pupils in providing for their uniqueness. Visually-handicapped pupils do have special educational needs that can only be provided by qualified specialists. They cannot receive such services if they are mainstreamed in the way some special educators would recommend. Which philosophical position is adopted for the future depends in large measure on the extent to which educators of visually-handicapped children insist that day as well as residential programs provide quality services in these critical areas.

Conclusion

Reviewing the past and identifying the strands that have had an impact on the present are interesting exercises. It is instructive to contemplate from whence we have come. We can see the influences and impacting variables through hindsight rather clearly.

Reviewing the present and attempting to identify the strands that will have an impact on the future are somewhat more difficult. Which are the significant and critical strands? We can only speculate on the basis of the past and raise questions about the possible directions based on past experiences. Sometimes we may be able to influence the direction; sometimes, not. In any event, the accuracy of our predictions will be evident only when the future becomes the present.

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CHANGING POPULATION OF THE BLIND IN THE UNITED STATES:

THE GERIATRIC BLIND

by

Bonny Russell
San Jose State University
San Jose, California

The Elderly Blind

Geriatric blind and visually-impaired persons presently constitute a large and growing minority within the already sizeable group of elderly persons in this country. This is due to the fact that the major causes of blindness and visual impairment are associated with aging.

There is no single source of information about the numbers of visually-impaired elderly persons in the United States today. The number of both public and private agencies concerned with blindness and the lack of agreement on definitions and measurement of vision impairment complicate and confuse the statistics. It has been estimated that there are approximately 1.7 million persons with severe visual impairment and of this group almost 500,000 are over age 65. Surveys indicate that "blindness in the U.S. and in other developed countries is largely an impairment of old age, and the disproportionately large number of old people among the blind is perhaps the single most important characteristic of this population. Although varying definitions of vision impairment produce somewhat different age distributions, the high positive correlation between aging and sight loss remains. To illustrate, in the sixteen MRA (Model Reporting Area for Blindness Statistics) states in 1970, approximately 10% of their total population was 65, but close to half of their blind registrants were in this age group. Indeed the blind prevalence rate among persons 65 and over was 18 times as great as the rate among those under 20 and the prevalence among the very oldest--those 85 and over--was 32 times the rate among persons in the 20--44 group. In the United States today, blindness is far less likely than in the past to result from the infectious diseases of infancy and early childhood and far more likely to result from the more gradual, degenerative (and usually irreversible) conditions" (Goldstein et al., 1975). Even without adequate data on the trends, surveys point out that the numbers of blind and visually-impaired elderly persons are increasing. The rapid growth of our over sixty-five population and the projected future increase of this segment suggest even greater growth in numbers of the visually impaired and blind.

Causes of Blindness

The leading causes of blindness in the United States today are diabetic retinopathy, senile cataract, senile macular degeneration, and glaucoma. Their incidence increases dramatically with age. (The National Commission on Diabetes, created by Congress in 1974, reported that the present increase in the diabetes rate means that the number of cases will double every fifteen years . . . a person who lives to age 70 has a one in five chance of contracting diabetes.) Severe visual impairment and total blindness may be needless or preventable. Senile cataract and glaucoma, eye conditions that are frequent among the elderly, both respond to medical intervention. With early detection and diagnosis and appropriate treatment, blindness from glaucoma can generally be prevented or further vision loss controlled. Vision can be restored in those having vision loss from cataract through surgical removal of the lens. This procedure is almost entirely successful for those cases in which surgery has been recommended. While blindness from retinal degeneration and diabetic retinopathy cannot be prevented, early detection through regular eye examinations, maintenance of good health, and control of diseases such as diabetes and vascular conditions are important in limiting further loss of vision.

Services for the Blind and Visually-Impaired Elderly Person

It is generally agreed that most of the elderly blind are newly blind with some remaining vision, mainly over 75, multi-impaired, poor and non-white. A significant number of this population is not normally identified as legally blind. They are most often persons who have become blind at a late age when they are also dealing with some of the physiological and psychological problems that may accompany aging. Often they must contend with hearing problems, with loss of balance and movement, and with sense of touch and taste just at the time when these sensory mechanisms are the most essential in learning to cope with a visual impairment. The adjustment problems of retirement and the frustrations of establishing a new life style may also add to the problems encountered because of the visual impairment. It appears that, to a great degree, the problems of blindness are the problems of aging (Scott, 1968).

For the blind and visually-impaired person a standard and well-planned variety of services is provided by rehabilitation personnel, either in the home of the client or in special settings such as a rehabilitation center. These include, but are not limited to, personal management skills, training in daily living techniques, mobility training, communication skills, and services that relate to interpersonal and psycho-social needs.

Educational and vocational services are provided when there is possibility of employment or where there is need for continuing education.

Medical services, especially those that delay or prevent loss of vision, are used when the impairment is caused by a condition that may respond to treatment. Low vision aids and services to amplify or enhance the ability to read may also be provided.

The above services are expanded through many excellent and innovative programs provided through local and national organizations, designed to serve as additional resources for the blind or visually impaired person. These include the Library of Congress Talking Book Program, a national lending library for recorded or taped books and magazines, radio reading services (a network of open or closed circuit radio channels broadcasting articles, fiction, information from current books, magazines, and newspapers). Also there are many publications planned for the blind and visually impaired and for the professional in the field and new kinds of equipment and appliances are constantly being developed for use by the blind and visually impaired.

The Elderly

Numbers

The number of persons over 65 in this country increased from 3.1 million in 1900 to about 20.2 million in 1970. The proportion of the over 65 group in the total population increased from 4.1 percent in 1900 to almost 10 percent in 1970. Fertility and mortality factors as well as migration to this country have had the greatest impact on the numbers (Cutler et al., 1975).

Further, in recent projections of the Census Bureau, as reported in the San Francisco Chronicle on February 10, 1977, seventeen percent of Americans or one in every six will be over 65 by the year 2030--more than 46 million persons, or more than twice as many as the present 23 million.

Needs and services for elderly people:

The numbers indicate the importance of the group and its possible influence on future change in this country in many fields. But, of even greater importance is the fact that there are various social, psychological, and biological changes that have effect in aging and these may engender other problems. Elderly people have identified problem areas, and services have been developed or are being developed to meet the needs in these areas. Some of these needs and services are listed briefly as follows:

1. The need for income maintenance is of paramount importance. Various forms of income maintenance are in effect for older people-- Social Security, Supplemental Security income, veterans pensions, and private pensions. Most are limited in effectiveness by regulations and by problems within the system. Most of them will have constant review during the next few decades as the number of elderly people increase and as policies change to accommodate these changes.

2. Medicare and Medicaid, planned to meet the health needs of older people, while providing some necessary services, have fallen short of their goals and provide only about 40% of the total health care needs of elderly people. With reference to visual impairment, services are limited to specific treatment for serious eye conditions and do not include eye examinations, low vision services or the rehabilitation services that would help people with severe visual impairment or blindness.

3. A choice of housing and living arrangements are necessary for elderly persons. These should be specially planned to meet requirements of the later years and should have added service features that assist in maintaining independence. While much housing for many income levels has been developed, there is need for a greater quantity and for innovations in this field.

4. Although some transportation needs are presently being addressed, much still needs to be done to develop transportation with both design and service features that will help to provide necessary mobility for all senior citizens.

5. A major need, that of adding quality to life, has been addressed through leisure services. Social services have been developed that are of assistance to elderly people in maintaining social relationships, in providing opportunities for voluntary activities or work roles, and in continuing community participation. Educational programs designed for the elderly are becoming increasingly available through community centers and through schools at every level.

6. In order to maintain independence as long as possible there is a need for home services. Many of these are now available and more are being considered, particularly those that will provide alternatives to institutional care.

7. Nutrition services are responding to needs of the elderly mainly through a national program that includes a home delivered meal program.

8. Legal services, ombudsman services, and advocacy services are presently being established on a national basis.

Correlation Between Aging and Blindness Pilot Projects

Because of the lack of relatedness in services and with increasing numbers in both the categories of blindness and aging, awareness of the need for information concerning the blind elderly resulted in a research conference in 1967 called by the American Foundation for the Blind and funded through a grant from the Administration on Aging. The conference participants reviewed research in the field and indicated a need for future social policies and action that address the importance of blindness and other conditions that affect people in old age. Services, communication, and understanding of the problems also were cited as appropriate areas for further consideration (Josephson, 1968). As a follow-up to the conference a Task Force was established by the Foundation to promote public understanding of the problems associated with blindness and aging as well as to identify resources and to collect data in the field. Demonstration programs were developed following these early actions. In New York one of the programs involved the inclusion of visually-impaired and blind elderly people in ongoing senior center programs. Another assisted elderly people to work with the sighted as volunteers in R.S.V.P. (Retired Senior Volunteer Program). An introductory handbook was developed by the American Foundation for the Blind describing services needed by visually-handicapped elderly persons. Under the banner of Operation Independence, NVOILA, two demonstration programs were established to bring new services, or expand existing services, to elderly blind people to prevent unnecessary or premature institutional care. Operation Independence is a national program of the voluntary sector with the purpose of providing services for the vulnerable aging in the rural areas.

The special concerns section on Aging and Blindness of the White House Conference on Aging in 1971 emphasized the preventive measures that were necessary for, and recommended the promotion of, increased mobility for the blind, greater rehabilitative efforts, and some emphasis on alternatives to institutional care. Regional conferences sponsored by the American Foundation for the Blind brought together specialists from the fields of blindness and aging with the purpose of fostering cooperation. Symposia were held in St. Petersburg, Florida, and in Albuquerque, New Mexico, to initiate the formation of community service committees on aging and blindness that could serve as examples for replication. The first National Conference on Aging and Blindness was held in 1975. This conference, sponsored by the American Foundation for the Blind, the Administration on Aging, Office of Human Development, NEW, and the Office for the Blind and Visually Handicapped, NEW, suggested goals for the future. Principles and guidelines were delineated in order to better serve aging blind persons. It was recommended that services to blind and visually impaired older persons should be a fundamental part of a system of services to the aging, that there should be strategic

relationships established between the two fields and that the blindness systems should advocate for properly designed supportive environments and a comprehensive range of services for older blind and visually impaired people (Beattie, 1975).

Expanding Access to Services for the Geriatric Blind Organization in Aging

The listing of services for both fields, Blindness and Visual Impairment, and Aging, does not assure the provision of all services necessary. Overt action must take place to develop the linkages between the fields that will expand the client group and the service possibilities. It would seem appropriate to approach the elderly person with visual impairment where the largest groups of older persons are, that is, through the Aging programs (Russell, 1977).

From some of the above statements it is quite evident that greater coordination between the two fields has been considered, and while some attempts to provide this coordination have been successful, they have been on a trial or demonstration basis. This has been due partly to the fact that there is no single organization in the United States dealing with the total spectrum of problems of blindness and visual impairment. Rather there are many agencies and organizations with dedicated personnel providing certain segments of services to a population that is rapidly changing from one with a preponderance of youth to one with a majority of aged. A similar lack of organization is evident in the field of aging. Prior to 1972 services for elderly people were fragmented both in approach and placement.

A major change was accomplished through the 1972 amendments to the Older American Act when there was established not only a national pattern of organization for provision of services for the elderly but also, through federal guidelines, there were distinct requirements for the development of coordinated services between service fields that had impact on the aging.

The organizational pattern called for Area Agencies on Aging to be developed in local areas depending on geographical situation, size of population of older people, and feasibility within state planning areas. Federal funds allocated through the states were to be provided following local planning acceptable to the state unit. Federal guidelines (Title III, Older Americans Act) defined the major objective of the local programs as "to strengthen or to develop at the sub-state or area level a system of coordinated and comprehensive services for older persons--services which will enable older persons to live in their own homes or other places of residence as long as possible" (Federal Register, October 11, 1973). A list of services named included home health services, homemaker services, shopping, friendly visiting, telephone and many others such as special services for the blind or visually-handicapped elderly person.

Four services were initially mandated under the federal guidelines. These were Information and Referral, Transportation, Escort Services, and Outreach. These are the services that provide an introduction to an array of necessary services for elderly people and could be of particular value in assisting elderly visually-impaired persons to make use of the rehabilitative services. Information and Referral services would help in identification of service needs and would provide appropriate contact and follow-up. Transportation was aimed at moving elderly people to and from community facilities and service agencies, to make more services more accessible, to reduce isolation and to promote independent living. Escort services were to add assistance, personal security, and protection for those with needs for this service. Finally, Outreach was to search and find the hard-to-reach individuals and to assist them in gaining access to services.

The above services are excellent in concept, are being established on a firm network basis, and are being used effectively in most areas. However, with respect to services for the visually impaired, there are several factors missing. One of these is that there is little special emphasis on blindness and visual impairment as a problem accompanying age. Therefore, for the professional, para-professional or volunteer in aging who is often the first to have contact with the older person who is seeking help has little specialized training in blindness and visual impairments. A second problem arises in that there is a lack of information available to Aging personnel about the Blindness agencies, their range of services, procedures, and their ability to help. A third problem exists in that while some agreements have been formalized, coordination and cooperation between agencies have not been established adequately. This problem exists even though coordination of agencies and organizations is a prime responsibility of Area Agencies on Aging in order to provide for the delivery of the essential services effectively--when and where needed. In emphasizing coordination, the Older American Act indicates that definite interagency and interdepartmental agreements must be made within the Aging program structure at all levels of organization. Under such agreements, information on needs would be made available or would be sought through joint study or survey, resources would be expanded through sharing arrangements, and better solutions could be a result of the deliberations of an augmented group of knowledgeable individuals. Formal cooperative agreements have been completed at federal levels between the Administration on Aging and the Rehabilitation Services Administration with H.E.W. and at least sixteen states have finalized state level agreements.

Nutrition program:

The nationwide Nutrition Program is also a major program in Aging that provides opportunities to reach older persons with visual impairment and to initiate the necessary special services. The Nutrition Program (Title VII, Older American Act) supplies meals

to elderly people under the auspices of both public and private organizations. The designated population to be served includes those (1) whose finances are so limited that they cannot purchase adequate food, (2) who lack the skills necessary to prepare nourishing and well-balanced meals, (3) whose mobility is so limited that it is difficult to shop and cook, and (4) whose feelings of rejection and loneliness destroy their incentives to prepare and eat meals alone. Elderly persons who are eligible for the meals may also receive social services such as transportation, recreational opportunities, education, counseling and linkages with providers of other required services not available through the nutrition project. Here, again, the proper training to effect satisfactory reach-out along with agreements with local blindness agencies would result in greater access to rehabilitative and social services.

The multiservice senior center:

Although there are more than five thousand senior centers in the United States, ranging in size from less than one hundred members to several thousand, they are usually locally sponsored, whether public and private, and only loosely joined together by a National Institute of Senior Centers sponsored by the National Council on Aging. The multiservice senior center, a centrally located facility with professional management, provides a broad spectrum of services for the elderly. It usually has complete acceptance by the community and maintains established relationships with other service providers and resource agencies that impact on the elderly as changes take place and as new needs occur. Socialization factors abound within the center setting, and there are opportunities for education in many different areas for leadership development, and for volunteer activities. Elderly people experiencing the onset of visual impairment may be easily identified by staff and other participants when they begin to experience difficulty in reading the normal publications and notices of the center if the center staff, the leadership group, and the members have an awareness of the problems and the possibilities that exist. Most elderly people retain some sight, may have potentially useful vision, and think of themselves as having trouble seeing. When problems are first perceived, referral service personnel can be alerted and can relate the individual to the blindness agencies for proper services and rehabilitative care. Supportive relationships can continue within the center activities. While the attitudes of individuals may become negative by the occurrence of severe visual impairment or blindness (Lukoff, 1972) relationships may not be disturbed as much in a center or group setting. In such settings the blindness becomes one of the deficiencies that occur in age and nearly all members of any senior group are coping with some deficiency or incapacity. Peers will seldom make the elderly visually-impaired person an object of excesses of pity and sympathy, but will understand, will expect that all pertinent services will be used and will provide the challenge and the assistance that will keep the individual active in the group. When the onset of blindness is sudden, effective programming in a center should provide counseling, afford peer

relationships and group activities that counter the shock that may follow and help prevent withdrawal. Within the center program adaptive capacity is enhanced by the services provided and as well as by the facilitating environment (Bengston, 1973).

The day care center:

The Day Care center is an extension of the Senior Center and is designed for elderly persons with more serious deficiencies than the normal center member. Social support is continued and also adds the more extensive care that its clientele requires because of either advanced age or illness. For the very elderly blind person, it may mean that continued living with family may be possible if the day care can be provided.

Organizations of elderly persons:

Access to services may also be enhanced through some of the large organizations of elderly people that are now active in the United States. The combined National Retired Teachers Association, American Association of Retired Persons, the National Council of Senior Citizens, the National Association of Federal Employees and several others have communication with several million members through newsletters and magazines that bring information about problems, resources, and solutions to individual members.

Conclusion

Even though programs are in place, the policies and practices surrounding programs may need new strategies in order to accomplish new goals for elderly blind persons.

In 1971, the American Foundation for the Blind developed a policy statement that addressed the need for change in methods of service for the new population of elderly blind and visually-impaired persons. This statement postulated that (1) the problems of blindness and visual impairment are only part of the problem of aging and an effective system of social services for the blind should be based on an understanding of aging in our society, (2) collaboration or cooperation with services in many other fields, especially in the field of Aging, should be a part of any program effort of specialized agencies, and (3) plans for the delivery of services to aging blind persons should be related to needs and problems and to developing new services for changing needs.

At about the same time, in an article on Aging and Blindness, Donald Schon emphasized the need for change in delivery of services for elderly blind persons. He suggested methods of integrating the services through (1) contracts to provide services for the client

through other agencies, (2) establishing an ombudsman program to assist blind and visually-impaired elderly persons in negotiating the system, and (3) providing funds for the client for the purchase of services (Schon, 1970).

Both of these statements relate to the purposes of broad cooperation with the basic goal being that of serving the client effectively. If blind and visually-impaired elderly persons are to be sought out and to receive the necessary intervening services for optimizing functioning (Kalish, 1970), both fields, Aging and Blindness, must seek avenues through which to provide services for the necessary client impact. This will necessarily be through educational programs and an array of compatible services that are coordinated so as to deliver adequate assistance and include challenges for success so that continuing forward movement may take place in both fields.

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THE IMPACT ON EMPLOYMENT OF A CHANGING POPULATION
OF BLIND PERSONS IN THE U.S. WORK FORCE

by

George A. Magers
Director, Division of Rehabilitation
Bureau for Blind and Visually Handicapped
Rehabilitation Services Administration

It is certainly a privilege and a pleasure to be a participant in the program of a General Session of AAWB in Portland, Oregon in July 1977 and likewise it is an honor to be on Dr. Scadden's panel this afternoon. However, it is with deep sorrow that I am here in Doug MacFarland's stead. Like all of you, we in the Office for the Blind and Visually Handicapped miss him greatly. It is with full realization that I know he will be honored much throughout this Convention.

So often we have heard the expression, "What a difference a day makes!" I believe today on this program we might say "What a difference a generation makes!" For as you can note from the presentations of my colleagues on this panel, the blind population of the United States has indeed changed in a single generation. This is not only true with regard to blind children, but also with regard to the elderly blind, as well as to the conditions that cause blindness.

The total employment picture for blind persons in the United States has drastically changed in just one generation. The groundwork for these changes, of course, was laid somewhat before the beginning of the generation just past, and we sincerely believe the changes will be accelerated in the coming generation. Some of that groundwork, of course, was laid more than one hundred and fifty years ago with the establishment of educational facilities for blind children throughout the United States. Later, part of that groundwork was laid in the development of public and private agencies serving blind adults. A service delivery system has gradually emerged throughout the Nation since the turn of the century. However, the most significant groundwork was laid in the 1930's and early 1940's with national legislation aimed at improving employment opportunities for blind persons in America. Such national legislation as the Wagner-O'Day Act, the Randolph-Sheppard Vending Facilities Act, and the Barden-LaFollette Act of 1943 were prime factors in the changes to come in the employment of blind persons.

In the beginning these changes were slow and real significant impact did not begin to take shape until the late 1940's or early '50's. Since that time, however, the employment of blind persons has undergone many changes for the better. The outlook for the eventual employment of our blind children and employment opportunities for adults who have lost their sight in early youth or within their working years has become increasingly brighter. For example, prior to the Barden-LaFollette Act in 1943, fewer than 1,000 blind persons had been rehabilitated through the State-Federal vocational rehabilitation program. Since that time the number has gradually increased until this year when we anticipate that more than 10,000 blind persons will be rehabilitated and placed into gainful employment. We are also at a point where we believe that at the end of FY 1977 more than 20,000 visually handicapped individuals will find employment through that same program. While we feel these numbers are significant, we do not believe they are the most important aspect of what is happening to the blind of our Nation with respect to employment opportunities. Rather, we feel the most fundamental difference which has taken place in a single generation is the widening range of employment opportunities into which blind persons are now moving.

As a result of special efforts within the Federal government, along with State vocational rehabilitation agencies throughout the country, new occupational areas including the expansion of existing ones are opening up for the blind and visually handicapped. The number of these individuals entering competitive employment is gradually increasing each year. An equally important development is the widening variety of jobs into which the blind in particular are being placed.

Before we go into specific occupational areas that are opening up for the blind and visually handicapped, I would like to say that through the State-Federal vocational rehabilitation program we are sponsoring more than 5,200 blind students in a variety of colleges and universities. These students are majoring in an ever-growing number of disciplines that will allow them to compete in jobs heretofore closed to them. As an example of what I mean, let me for a moment quote some statistics compiled from RSA's closure reports for FY 1976. Since a tabulation of all closed rehabilitated cases was not available we have made projections based on a partial tabulation of rehabilitated blind or legally blind people.

For FY 1976, 9,500 legally blind individuals were reported as rehabilitated and placed into employment. The types of employment reported were divided into forty-four different broad categories of occupational families. Around 50% of the 9,500 rehabilitated were employed as homemakers, unpaid family workers or in sheltered workshops. Homemakers were by far the largest single group, comprising 44% or around 4,250. Eight percent of the 9,500 or around 780 blind individuals were closed rehabilitated in the professional category. Such occupations as lawyers, scientists, artists, and teachers were listed under this section.

Eighteen point 5 percent (18.5%) or around 1,750 of all rehabilitated closures were listed under the broad employment family of service and sales occupations. This included such occupations as vending facility managers (4% or 370), domestic and food service (370).

Sixteen percent or around 1,500 rehabilitations were closed in the industrial field. Two percent were closed as skilled jobs, 3% were in the semi-skilled category, with the remaining 11% listed as unskilled jobs. The remaining 8% were in the building and farming occupations.

We believe that the combination of the professional and industrial categories representing around 25% of all rehabilitations is an indication that more and different types of occupations at the upper level of the job spectrum are opening up for the blind. Examples of such new occupational openings that have recently been made available to the blind are Information Service Expeditors and Job Information Specialists. These two occupational areas are the results of special efforts within the Federal government. At the present time more than 450 blind individuals have been placed in these positions within the Federal government. Another area currently under exploration is the training of blind individuals to work as telephone operators with the U.S. Bell System.

Following the passage of the Randolph-Sheppard Act in the late 1930's and the Vocational Rehabilitation Amendments of 1943, the State-Federal vocational rehabilitation system initiated a landmark effort on behalf of blind and visually handicapped individuals throughout this Nation. This effort took the form of the development of programs in State after State which intensively emphasized the necessity of sound, practical vocational training combined with an active, deliberate, selective placement service. Special programs for the training and employment of blind persons were neither new nor original in the 1940's. During other eras in the field of work for the blind, similar efforts were mounted and were successful in their particular locations. However, the things that were new to the field of work for the blind were the infusion of a solid financial base and the nature and scope of the national vocational rehabilitation program which affected the blind in America.

Just thirty years following the Rehabilitation Act of 1943, the Federal government had another landmark statutory base from which services to the blind and visually handicapped in our country are again moving forward with renewed vigor. The rehabilitation Act of 1973 includes a range of provisions which if successfully implemented can move our efforts to train and locate suitable employment for greatly increased numbers of blind persons. This legislation lays the groundwork for, and to a lesser extent actually provides, an increase in the financial base so sorely needed in the State-Federal vocational rehabilitation program. Moreover, of equal importance is the general intent inherent in the law. There is no doubt that the intent of Congress is to give priority attention to

the severely disabled in our Nation. Again, this is neither new nor original, for this intent was the basic thrust of the 1943 Amendments. However, the methods and techniques for achievement will be different in accordance with the socioeconomic needs for the time in which we live. Already we note the development of objectives and operational plans which will place the highest priority on services for the severely disabled and insure them suitable employment. This means, of course, increased emphasis on the development of selective placement programs for the blind and visually handicapped as well as other severely disabled groups of individuals.

Section V of the 1973 Act will have a particular impact on our efforts in job development and selective placement and, of course, these in turn will have a similar impact on vocational preparation. As you know, this section of the law deals with the employment of the severely disabled. A number of items especially address themselves to employment with the Federal government. The law requires that every Federal agency and department develop affirmative action plans for the direct employment of the severely disabled. It also provides for the review of these affirmative action plans by the Civil Service Commission which, in turn, is required to report to Congress on the results. Similarly, business and industry are required to develop affirmative action plans for the employment of the severely disabled when they have work involving contracts with the Federal government, amounting to \$2,500 or more. Already we are noting greatly increased action especially with regard to employment within Federal agencies as it is affected by the Rehabilitation Act of 1973. One of the most important results thus far is the specific assignment of individuals on a full-time basis to develop affirmative action plans in different departments and agency headquarters. The implementation of these programs will require positive policies affecting the procedures and practices throughout entire departments and/or agencies. It will be up to those of us who are particularly concerned with the selective placement process to follow these developments closely and actively seek to provide the kind of assistance which will assure their success. It is still somewhat early to expect the 1973 Act to have produced increased placement and employment opportunities in Federal agencies. However, we believe the time is right for the severely disabled, including the blind and visually handicapped, to find successful work opportunities in increased numbers with our Government.

Our office has had the privilege of being involved directly or indirectly with more than 1,000 blind persons in securing substantial employment in the different Federal agencies and departments throughout the country. The jobs into which these people have moved are varied and indicate a wide range of interests, abilities, and capacities. They include, among others, transcribing typists, switchboard operators, and secretaries, and on the professional level, the range includes technical writers, chemists, electronic engineers management analysts, attorneys and personnel specialists.

Business and industry will experience a greater time lag in the required development and implementation of affirmative action plans for the employment of the severely disabled. However, a number of large corporations are already developing plans in this regard. We have noted two in particular, AT&T and the IBM Corporation.

Vocational rehabilitation personnel, in general, and counselors, in particular, having the responsibility for the rehabilitation of the blind and visually handicapped, can build broad general avenues of access to employment opportunities and can open specific doors. However, individuals usually must convince the employer that they can successfully perform their particular jobs. We have found that this is especially true with respect to white-collar employment with the Federal government.

During the last 20 years of this century we do not anticipate a decrease in employment opportunities for blind and visually handicapped persons in the professions. However, we do anticipate and, in fact, are now finding tremendously increased competition for each professional opportunity. One example can be found in the field of teaching in public school settings where during the 1960's we experienced a rather dramatic increase in the number of blind persons finding employment as teachers of sighted children in elementary and secondary schools in the country. We are now finding that trained teachers who are blind are experiencing increased difficulty in obtaining a teaching position simply because the number of applicants far exceed the number of new positions. From all indications, a similar situation is beginning to emerge with respect to the employment of blind persons as computer programmers. On the other hand, increased employment opportunities for the blind are emerging in other professional, paraprofessional, and clerical pursuits. We see a new horizon in the career of a young totally blind meteorologist who was accepted as a blind student majoring in meteorology and is now employed by the Federal Weather Bureau. An even more exciting prospect may be seen in the fact that one of our Nation's leading medical schools accepted a totally blind medical student who has now graduated with his M.D. degree and is in the process of completing his necessary intern's work in the field of psychiatry.

At the present time, plans are being developed for opening new careers in paraprofessional occupations emerging in the allied health manpower field. A demonstrative innovative training grant has been awarded to St. Mary's College in Minnesota and blind students in the training programs for physical therapy assistants and occupational therapy assistants will commence their two-year AA degree training this Fall.

The employment of blind persons in managerial occupations will continue to cover a wide range of job situations and we anticipate a gradual increase in the number of well-trained, qualified, and highly motivated individuals moving into jobs requiring managerial capabilities. Employment opportunities will certainly occur in business and

industry for management and executive personnel. They will also occur for many blind and visually handicapped individuals in the management of their own business enterprises.

As indicated at the outset of these remarks, the passage of the Randolph-Sheppard Act in 1936 has proven to be a landmark action with respect to the training and employment of blind persons in the United States. That law heralded the development of one of the most highly successful business enterprise programs offered any disabled group in our Nation. The vending facility program for the blind, as it has grown throughout the country, is providing increased employment opportunities in improving quality positions for blind persons with managerial capabilities. During the ensuing years the Randolph-Sheppard vending facility program for the blind has grown until today its gross sales of more than \$163,609,731 in FY 1976 places it in the big business category. At the end of fiscal year 1976 the program provided employment for 3,789 managers or vendors in 3,431 locations. Growth has not only taken place in the gross sales but has also shown constant improvement as indicated in the rise in the average net earnings for operators which in FY 1976 was \$9,792. The vending facility program provides employment opportunities for a significant number of blind persons as shown earlier in this paper. The employment opportunities for vocational rehabilitation clientele are brought about through the establishment of new locations, expansion of locations already in operation, and personnel turnover. The above figures are cited in order to illustrate the tremendous growth which has taken place in this business enterprise program over a third of a century. In short, we have moved from a form of sheltered employment to a highly competitive large business operation. We have moved from the small magazine stand in the lobby of a post office to well-operated, high volume snack bars and, in some instances, cafeterias.

For many years blind and visually handicapped individuals have found successful employment opportunities in the clerical field, a few as receptionists, still more as switchboard operators, others in the retail trades as sales clerks, and still a larger number in stenographic work. A significant number of these jobs have been found in hospitals where blind typists transcribe medical records. Still other jobs involve straight transcribing typing. Today, with the advent of new and sophisticated power typing equipment and the organization of work into word processing systems, there is an increasing number of instances where blind persons are finding substantial employment in highly responsible secretarial positions. We believe the changes occurring today will continue through the rest of the 20th century.

Service occupations are continuing to offer the greatest increase in employment opportunities for Americans in general, and blind and visually handicapped rehabilitants throughout the Nation are following this trend. In the past when we have talked about placement activities in service occupations, it has meant primarily employment in supportive jobs in hospitals, the behind-the-scenes

work in the food and lodging industry, and some types of recreational activities. Let me outline what is currently happening and what presages the future with respect to the employment of blind persons in service occupations.

Certainly, the State-Federal vocational rehabilitation program will continue to place a number of blind and visually handicapped individuals in such service occupations as central supply in hospitals, mangle operations in laundries, and dishwashing in restaurants and hotels. Certainly, others will find employment in maintenance work, in the field of recreation, and a host of other skilled, semi-skilled, or supportive jobs in service activities. At the same time a galaxy of new service employment opportunities has developed. The range of these runs the gamut of occupational areas such as professional, paraprofessional, managerial, and clerical. In many instances they are now and will be comparatively simple. In other instances they are requiring highly professionalized training and ability. Still others will involve highly sophisticated telecommunications equipment which will interface with our personal telephones as well as large computer complexes.

Computer-related employment is one of the emerging occupational avenues which will influence the employment configuration of Americans for the remainder of the century. Already blind persons are beginning to be trained and equipment is being developed which will enable them to compete for new jobs in this field. Independent terminals feeding back information either in braille or audio are opening an array of jobs for those blind persons who have the vocational preparation and the capacity to fill them.

Mechanization, it is true, has enabled our manufacturers to produce more goods with fewer man hours. However, our imagination, ingenuity, and competitive system have created many new products, and with the rising standard of living, demand has kept pace. At the outset of every major phase in our industrial development, there has been the real concern, primarily on the part of labor, that jobs would be eliminated and that machines would replace individuals and create mass unemployment. As our society has adjusted to automation, the clamor against this development has eased. However, even today, there is much discussion with regard to new production methods and advanced equipment creating a serious unemployment problem. So far, in every instance, the concern has not been valid. Rather than creating a large body of unemployed workers, industrial knowhow has actually increased the number of jobs available in the land. In fact, this year, there will be more new jobs created than there are individuals entering the labor market for the first time.

Jobs in industry are changing as old ways of producing materials have given way to new and more effective resources. Training and skill requirements of workers are more demanding. In many instances, this necessitates retraining of workers for new positions. In other instances, it means an actual shift from one industry to another, but

Americans are generally a highly mobile people and adjust to these requirements as they develop.

The history of the employment of blind persons in industry in large numbers is short as compared with the overall industrial revolution. Consistent growth in the ranks of these employed people has only occurred since the early 1940's, during the Second World War, and thereafter. For example, during the 1960's, the number of blind persons entering competitive employment doubled, and the highest category of employment continues to be in the industrial or manufacturing segment of our economy. The kinds of jobs blind individuals are performing are continually changing and the requirements for performance are increasing. Thus, if we are to maintain our standing in the competitive labor market, we must constantly plan for improved vocational preparation for clients. We must also do a better job of preparing professional workers for the blind to perform selective placement.

Our Nation is now concerned with the development of more effective trade and technical training resources and strengthened manpower programs for workers in general, and it is even more essential that we gear our program of services to the blind to keep pace. No longer can we prepare our clients for today's jobs only. We must give them the kind of training to develop the skills needed for employment tomorrow and twenty-five years hence. Blind persons, properly trained and placed in the right employment setting, are proving to be as flexible as their fellow workers with the one exception that they still must do these jobs where sight is not an essential factor. Fortunately, there are still more of these openings than we have clients prepared to fill them. The basic secret to success continues to be a vigorous dynamic selective placement program involving professional people with initiative, imagination, and ingenuity, and above all, confidence in the products they are bringing to employers as well as a belief in the fundamental soundness of this program.

Let me assure you that an item of high priority for the Office for the Blind and Visually Handicapped will be a continual push in the area of opening up new and different employment opportunities in which the blind and visually handicapped can compete with the nonhandicapped on an equal basis. Such an effort will require time, staff time of OBVH, NCSAB, State agencies, private organizations and all other organizations and individuals interested in and working for the blind. It will require money such as special funds to pay for the development of new equipment and techniques for specific occupations for use by the blind, and special funds to pay for the training required to enable the blind to use the new equipment and function within the special techniques developed.

Time and money--two commodities of which Federal, State, and local governments, and private organizations of and for the blind generally do not have an overabundance. Two commodities that, due to their scarcity, must be invested by all with special care and

commitment to help assure the greatest return possible. Two commodities that if invested prudently can bring into realization an expanding job market for the blind and visually handicapped.

In summary, we have not set a list of jobs for the blind nor do we want one, since we are firmly convinced that such a list would be much more limiting than helpful with regard to the provision of information on occupations or in the development of new careers. The everwidening range of jobs in which blind persons are proving successful is ample evidence of both their ability and capacity to cope with future employment demands.

Certainly, many jobs of today will disappear, but there will be completely new jobs for which we must be prepared to train our clientele. Blind persons, like their sighted colleagues, must have a basic educational background which will permit their skills to be readily convertible in retraining programs. If it is true that the sighted worker of the future will require retraining a number of times during his work period, it will be even more imperative for the blind person in the competitive labor market.

THE FRAMINGHAM EYE STUDY

by

Fred Ederer
National Eye Institute
National Institutes of Health
Bethesda, Maryland

In this paper I will discuss the objectives and results, recently published, of the Framingham Eye Study, a new approach to the study of visual disability in the population (Kahn et al., 1977a; Kahn et al., 1977b), in the context of population blindness data available from the principal source of such information in the United States, namely the state agencies for the blind.

The Model Reporting Area (MRA) attempted to improve the uniformity and reliability of the blindness data maintained by state registers by establishing standard definitions and procedures (Goldstein et al., 1962). The MRA data understate the extent of blindness in the population, and its major weaknesses are that the extent of underregistration is unknown and whether underregistration is more severe in certain subgroups characterized by age, sex, race, or economic status than in others (Kahn et al., 1973). Some studies have indicated that the true overall incidence of blindness may be double the register incidence (Josephson, 1964; Haddad, 1967; Graham et al., 1968). Later in this paper I will compare MRA blindness prevalence data with that found in the Framingham Eye Study. In the meantime, it is of interest to consider briefly what the MRA data indicate about trends in the amount of blindness and about its major causes.

Between 1962 and 1970, the period of operation of the MRA, both the incidence and prevalence of registered blindness remained essentially unchanged as indicated in Table I. The four major causes of blindness in the United States, according to MRA information, are senile macular degeneration, diabetic retinopathy, glaucoma, and senile cataract, each accounting for roughly 10% of new additions to registers. About three-fourths of registrants were aged 45 or more (Kahn et al., 1973). In addition to the unknown extent of underregistration, the value of the MRA data is also limited by their being restricted to persons whose eye disease or condition is severe enough to cause substantial vision loss. The need became apparent for a study of both those persons who are blind and those with eye disease who are not blind. The Framingham Eye Study offered the opportunity for such an investigation in an elderly population.

TABLE I
REGISTER INCIDENCE AND PREVALENCE OF BLINDNESS
PER 1,000 POPULATION, MRA, 1962-70

Year	Incidence	Prevalence
1962	0.16	1.61
1963	0.16	1.51
1964	0.16	1.50
1965	0.16	1.49
1966	0.15	1.47
1967	0.15	1.46
1968	0.17	1.54
1969	0.16	1.57
1970	0.15	1.62

Source: Kahn et al., 1973.

Since 1950, several thousand people living in Framingham, Massachusetts, an industrial city 21 miles west of Boston, have been under study by the National Heart (Lung and Blood) Institute. More than 99% of this study population, aged 30-62 in 1950, are white. In 1973-75, at which time the population ranged in age from 52 to 85, the Department of Ophthalmology at Boston University and the National Eye Institute collaborated on an eye survey of the survivors of the original heart study cohort. Of the 2,940 study participants still living in the Framingham area, 2,477 (84%) were screened for eye pathology. The study had two purposes, (a) to measure the prevalence of the four eye diseases that are the major causes of new blindness in the United States, and (b) to determine which, if any, of the more than 100 heart variables measured at 2-year intervals are associated with the risk of eye disease.

Routine mail and phone contact of the 2,940 persons living in the Framingham area resulted in a 78% examination rate, with 2,298 coming to the clinic for eye examinations. The names of the non-examinees were given to a nurse, who visited them at home, and spoke to neighbors and others to locate persons who had moved. This effort brought another 135 persons to the clinic, and another 44 individuals were examined at home and in nursing homes and hospitals for the aged because they were physically unable to come to the clinic. This intensive follow-up increased the examination rate to 84%. The data on those examined appear in Table II.

TABLE II
INCREASE IN ESTIMATED BLINDNESS PREVALENCE WITH INCREASE IN EXAMINATION RATE
AMONG 2,940 PERSONS IN THE FRAMINGHAM AREA

	Persons Examined			Prevalence of Visual Acuity ≤ 20/200 in Better Eye		
	Cumulative			Cumulative		
	Number	Number	Percent	Number	Number	Per 1,000 Examined
	(a)	(b)	(c)	(d)	(e)	(e)/(b)
Routine Mail and Phone Contact	2,298	2,298	78	15	15	6.5
Intensive Follow-Up Clinic Examinations	135	2,433	83	1	16	6.6
Home Examinations [*]	44	2,477	84	6	22	8.9

^{*} Includes nursing homes and hospitals for the aged.

Because various characteristics of both examinees and non-examinees were known from the heart study, it was possible to compare the examinees and nonexaminees on a variety of characteristics. They differed notably only in age, with the nonexaminees being older. Also, the prevalence of blindness was higher in persons who were examined only after intensive follow-up.

Of the four eye diseases studied at Framingham, prevalence was highest for senile cataract (15.5%), intermediate for senile macular degeneration (8.8%), and lowest for glaucoma (3.3%) and diabetic retinopathy (3.1%) (see table III).

It is noteworthy that cataract, a highly treatable disease, remains a major cause of blindness. Twenty years ago a study in New York City found that a considerable number of persons blind from senile cataract were treatable and that many did not undergo surgery because of fear (Bregman et al., 1957). Prevalence at Framingham of each of the four eye diseases increases with age, with particularly sharp increases for senile macular degeneration and senile cataract.

Significant associations of heart study variables with eye disease after adjustment for age (in 10-year groups) and sex, are shown in Table IV. The heart study collected information on more than 100 such variables, and on many of these variables the information was collected repeatedly at seven biyearly examinations, so that, although stringent statistical criteria were used to identify associations, some of these may be due to chance alone. In view of the "fishing expedition" nature of this investigation, the heart variables identified in Table IV, until they have been independently corroborated, should be viewed as leads for further investigation rather than as risk factors of eye disease.

Blood pressure, height, vital capacity, hand grip strength, and heart size show up as associated with either senile cataract or senile macular degeneration, or both. All these variables are age-related, and have, in fact, been proposed as measures to estimate physiological age. Because age adjustments in this analysis were made only in broad (10-year) age groups, it is possible that these associations merely confirm age as a risk factor in cataract and senile macular degeneration. Of perhaps greater interest are the associations of senile cataract with education, blood sugar and serum phospholipid and those of ocular hypertension with blood pressure, blood sugar and pulse rate. The paucity or absence of variables associated with diabetic retinopathy and glaucoma is disappointing, but may be due to the small number of cases of these two diseases found in the study.

Table V compares the number of blind persons found in the Framingham Eye Study with the number expected from the 1970 MRA data specific for age and sex.

The number of observed cases, 22 (the 95% confidence limits are 13.8 and 33.3), may slightly understate the actual number of

TABLE III
PREVALENCE PER 100 POPULATION OF FOUR EYE DISEASES,
FRAMINGHAM EYE STUDY, 1973-75

Age and Sex	Number of Persons Screened	Senile Cataract or Aphakia *	Diabetic Retinopathy	Senile Macular Degeneration *	Glaucoma
All Ages	2,477	15.5	3.1	8.8	3.3
Men	1,043	13.2	3.0	6.7	4.1
Women	1,434	17.1	3.2	10.3	2.7
52-64	1,293	4.5	2.1	1.6	1.4
Men	573	4.3	2.4	1.2	1.7
Women	720	4.7	1.9	2.0	1.2
65-74	787	18.0	2.9	11.0	5.1
Men	318	16.0	3.1	8.8	6.4
Women	469	19.3	2.7	12.6	4.3
75-85	397	45.9	7.0	27.9	7.2
Men	152	40.9	5.2	24.4	9.9
Women	245	48.9	8.1	30.1	4.9

* With corrected visual acuity of 20/30 or worse.

TABLE IV
HEART STUDY VARIABLES ASSOCIATED WITH EYE DISEASE,
FRAMINGHAM EYE STUDY

Senile Cataract	Senile Macular Degeneration	Diabetic Retinopathy	Glaucoma	Ocular Hypertension
Blood pressure (+)	Blood pressure (+)	Diabetes (+)		Blood pressure (+)
Height (-)	Height (-)			Height (-)
Vital capacity (-)	Vital capacity (-)			Casual blood sugar (+)
Hand grip strength (-)	Hand grip strength (-)			Pulse rate (+)
Casual blood sugar (+)	Left ventricular hypertrophy (+)			
Education (-)	History of lung infection (+)			
Serum phospholipid (+)				

Note: (+) = positive association (-) = negative association

TABLE V

NUMBER OF PERSONS WITH BEST-CORRECTED VISUAL ACUITY IN BETTER EYE
20/200 OR WORSE, FRAMINGHAM EYE STUDY

	Population	Observed [*]	Expected ^{**}
Men	1,043	6 (2.2-13.1)	3.2
Women	1,428	16 (9.2-26.0)	4.0
TOTAL	2,471	22 (13.8-33.3)	7.2
Sex ratio (women/men)		2.67 (0.99-8.33)	1.25

* Numbers in parentheses are 95% confidence limits.

** Based on 1970 age-sex-specific MRA prevalence for whites in the age group 45-84.

persons who would be determined blind by MRA standards because they include only those blind based on visual acuity; there may be some additional persons, though probably not many, who would be classified blind according to the MRA criterion of restricted field. Nevertheless, the observed number is three times the expected number, suggesting, as have previous studies, that underregistration of blindness may be substantial. Although the observed sex ratio of 2.67 blind women per blind man is about double the expected ratio, the difference is not statistically significant.

I mentioned earlier that among the four eye diseases studied at Framingham, prevalence was highest for senile cataract and lowest for glaucoma and diabetic retinopathy. The prevalence of blindness in an elderly white population like this, as estimated from MRA data, is expected to be highest for senile macular degeneration and lowest for diabetic retinopathy (see line 2 in Table VI). A measure of risk of visual disability, given the presence of one of these diseases, can be obtained from the ratio of blindness prevalence to disease prevalence (see line 3 in Table VI).

Because of possible bias due to underregistration of blindness, the values of this ratio should not be taken literally, but only as rough indicators. According to this ratio, risk of visual disability for white persons in this age range is highest (evidently due to its insidiousness) for glaucoma, and lowest (evidently due to its high treatability) for cataract.

TABLE VI
COMPARISON OF FRAMINGHAM DISEASE PREVALENCE WITH EXPECTED
BLINDNESS PREVALENCE, BY CAUSE

	Senile Cataract or Aphakia	Diabetic Retinopathy	Senile Macular Degeneration	Glaucoma
1. Disease prevalence (per 100)	15.5	3.1	8.8	3.3
2. Expected blindness prevalence (per 100,000)*	.036	.019	.057	.032
3. Ratio (2) ÷ (1)	.0023	.0061	.0065	.0097

* Based on 1970 age-sex-specific MRA prevalence for whites in the age group 45-84 for: cataract other than prenatal; diabetic retinal disease; retinal disease other than prenatal and diabetic; and glaucoma.

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LOW VISION AND ITS IMPLICATIONS

The four basic articles for this section entitled, "Low Vision and Its Implications," were prepared by Shekter, Colenbrander, Jahoda and Rosenthal. Dr. Randall T. Jose was invited to write the introductory statement, "Defining the Low Vision Service," that precedes the four articles.

DEFINING THE LOW VISION SERVICE

by

Randall T. Jose, O.D., Chief
Vision Rehabilitation Service
The Eye Institute
Pennsylvania College of Optometry

A great deal of interest has developed in recent years concerning the provision of low vision services to our visually-handicapped population. This interest has brought with it a myriad of "philosophies," "experts," and "how to's" in delivering this important and oft-neglected aspect of vision care. These different approaches have developed because the environments in which the present clinics are found differ tremendously and the backgrounds of the people providing low vision services are found in a variety of professions. Everyone would like his/her program to be the model. Unfortunately, or perhaps fortunately, "A MODEL" does not exist that is appropriate for all situations and for all people. In order to avoid presenting another model, an attempt will be made to define the low vision service in terms of goals and objectives--for the visually handicapped. Also, like the authors of the articles on low vision, attention will be directed to describing low vision as a service rather than build a specific protocol or submit another equipment list. In addition some comments will be made concerning goals and objectives with which we may feel comfortable within any of our specific professional settings and/or facilities.

The "Low Vision Service" is a series of interrelated assessments, evaluations, tests and instructional activities offered to a visually-impaired individual in an interdisciplinary setting. It is important to note that this definition emphasizes activities and/or responsibilities to the visually impaired and does not address problems of professional role responsibilities, facilities or specific tests.

If low vision service is defined as being a problem-solving endeavor on the part of many professionals for the visually impaired; then it is obvious that there can be a great deal of variation in how the low-vision service is delivered. The authors of the following papers describe various aspects of this total service in light of their own professional backgrounds and interests.

Dr. Shekter presents an excellent picture of the growing need for the development of low vision services. The active involvement of ophthalmology in the low vision service is crucial. As better medical interventions are developed, more people will be faced with the task of developing a normalized lifestyle as a visually-handicapped person. There is an increasing awareness on the part of ophthalmologists of the potentials for successful post-medical/surgical vision rehabilitation through low vision services. An important aspect of any adequate low vision service is the close cooperation among the medical field and rehabilitation professionals. As more and more individuals benefit from the new advances in medical technology, this relationship will become increasingly important. People must not be left to endure unnecessary loss of visual function simply because a physician or his staff are not aware of rehabilitation services and the complementary relationships they can have with medical services.

Dr. Colenbrander describes a new classification of blindness that represents the heart of the proposed low vision service scheme. The visual loss represents the clinical measurements from which one develop a basis for the use of optical aids and/or use as a base line to monitor changes in the disease process. His description of disability represents the functional handicap, due to the impairment, of the individuals being served. This new definition successfully combines the clinical and functional parameters of vision loss and again represents the important relationship between clinical and rehabilitational services. The growth and strengthening of this relationship will be the key to the future emergence of effective and rewarding low vision programs.

Mr. Jahoda presents an overview of one method of providing low vision services. Most importantly he refers to the strength of the service as being rehabilitative in nature. There are several publications that reinforce the same philosophy but present different modes of actually providing the service (1,2,3,4,5,6). AAWB'S most important efforts will be to use its strength as an organized group to seek appropriate legislation that will bring the necessary recognition of low vision as a rehabilitation service to various third-party programs. Low vision is no different from any other rehabilitation service. It is expensive if it is to be done successfully and correctly.

Dr. Rosenthal provides an overview of the clinical phases of the low vision service. In addition to this description of the low vision examination with subsequent training needs, Dr. Rosenthal reinforces the goal related interdisciplinary approach to low vision.

He states that each professional serving the visually handicapped should be familiar with the principles and practices of low vision services as they relate to his/her own field. This philosophy is the key to the development of the interdisciplinary cooperation that is so vital to the success of any low vision service.

Pursuing our definition of low vision further, a comprehensive program of care will be described. Again, the description is not to be considered as a model or even guidelines. The effort is to present a series of goals and responsibilities that will stimulate professionals to look at their own resources to see how they might make effective contributions to the service in any or all of these three phases described. The first phase entails those services/activities directed towards:

1. Recognizing/locating the visually handicapped in our society
2. Identifying their problems, visual and others
3. Referring for services appropriate to the problems identified

Briefly, this entails developing educational programs that will make more professionals acutely aware of the needs of the visually-handicapped. Through public relation efforts, the professionals and public will be familiarized with the accessibility of services to fulfill these needs. It mandates this greater public education effort so that individuals will not be able to hide in their homes and vegetate under the impression that "nothing more can be done." As more of our rehabilitational and educational services/agencies start promoting the use of low vision services by counselors and/or teachers we will see the most impressive growth in quality as well as number of low vision programs.

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LOW VISION--COMMON CAUSES, CURRENT TREATMENTS

by

William B. Shekter, M.D., Chief
Department of Ophthalmology
Permanente Medical Group
San Francisco, California

In the March 1977 issue of the American Journal of Ophthalmology an editorial by Dr. Frank Newell presented some rather startling figures related to present day eye care. Citing a report of Westat, Inc., I would like to give some idea of the magnitude of the situation.

More than 5 million patients are seen annually with newly diagnosed acute conditions of the eye, varying from 285000 with chalazion (stye) to 165000 with macular degeneration and 135000 with amblyopia. There are 1724000 new cases of chronic abnormalities each year of which 1532000 consult an ophthalmologist with referral from another physician. Of these, 829000 have cataracts, 373000 have strabismus and 146000 have glaucoma. Ten million six hundred fifty-nine thousand (10659000) people are seriously disabled because of impaired vision, the leading cause of which is cataract (1670000), followed by glaucoma (1070000) and retinal disorders (739000).

Of the 1483000 people severely disabled by visual impairments, more than half are affected by retinal disorders, glaucoma and cataract. Retinal disorders are the most common cause of blindness in an estimated 468000 legally-blind people. What this suggests, then, is a major change of focus from the problems of the "blind" to the problems of the person with seriously- or severely-disabling vision problems. This results from major changes in the diagnosis and treatment of many of the more common eye diseases. Only a few years ago, there was no satisfactory treatment for macular degeneration, diabetic retinopathy, or even retinal detachment, and many of these patients became blind. Patients with glaucoma often were inadequately diagnosed and treated, and inevitably became blind. Patients with corneal disease had a high failure rate with corneal transplantation and often progressed to blindness.

However, as a result of rapidly expanding technology and marked advances in understanding and treatment of many of these conditions, more patients escape blindness only to find themselves in the limbo of "impaired vision." They are able to walk, but not drive; able to read with low-vision aids, but not work; and able to take care of themselves, but not their families. However, they are not eligible

for most of the benefits available for the legally blind. But, what are some of the advances in diagnostic technology?

Glaucoma was formally diagnosed and followed by the Schiotz tonometer--a reasonably adequate but not very accurate pressure-measuring device. Its use frequently results in false readings. Applanation tonometry, with much more accurate readings, has largely replaced this tonometer. The development of electronic applanation tonometry and air tonometry have increased diagnostic capabilities even more.

Fluorescein angiography is probably the major advance in the diagnosis of retinal disorders. This is a process of injecting a fluorescent dye intravenously. The dye passes through the circulatory system to the blood vessels inside the eye making them glow when exposed to blue light. High-speed photographs of the retina enable the ophthalmologist to follow the course of the dye through the arteries and veins showing physiologic as well as anatomic and structural changes. In other words, one can see whether a blood vessel leaks, whether it carries blood where it should, and how the vascular system of the eye is functioning. With this new capability one can treat diabetic retinal changes or macular degenerative changes before they become so advanced that all vision is lost.

Since the introduction of photocoagulation of retinal lesions by Professor Meyer-Schwickerath using a Xenon arc bulb, the technology has rapidly developed. The development of the laser beam made possible first the ruby laser and later the argon laser that are capable of sealing small retinal vascular leaks, closing off patent blood vessels or welding areas of the retina with the potential to detach. As a result, for the first time in the treatment of retinal disease, one can successfully attempt to prevent visual disasters rather than only being able to repair the damage after the disaster has occurred. The results of the National Diabetic Retinopathy study over 5 years indicate that laser coagulations of certain changes that occur in many cases of diabetic retinopathy can, indeed, forestall hemorrhages into the vitreous body and subsequent blindness. Another means of doing this is by cryotherapy (freezing) of small retinal holes. This can be done on an outpatient basis and can forestall a detachment in the early stages.

A still more recent development in surgical technology and technique, known as pars plan vitrectomy, permits removing vitreous, opaque from hemorrhage, and restoring some degree of vision. This technique, though still in its infancy, promises to be extremely effective in returning some vision to the eyes that have already been badly damaged by hemorrhage and scarring.

Cataract, especially in the young, has long been a cause of severe vision damage. The results of surgery were far from satisfactory. The complication rate was high, the visual results poor, and usually several operations were required on each eye, often over a period of several years. At the end of this time, even with thick

spectacles, the child had often developed amblyopia and possibly strabismus and had little or no fusion. The elderly had other problems. They were often obliged to wait for surgery until their vision was inadequate to drive or to work. And, if the cataract was monocular, they were unable to have binocularity with glasses. In the past decade several major breakthroughs occurred. Following the development of enzymatic zonulolysis, the dissolving of the fibers that hold the lens of the eye in place with an enzyme called alpha chymotrypsin, and by the introduction of cryoextraction of the cataract by applying a freezing probe to the cataract to permit removal more easily than with the older means of forceps, it became possible to remove cataracts safely before they reached maturity so one did not have to wait until being disabled before having surgery.

The further development of phakoemulsification of cataract, a procedure that permits removal of cataracts through a closed system by breaking up the lens and sucking out the fragments through a tiny incision with a computer controlled instrument, resulted in relatively safe, rapid and complete removal of cataracts in the very young.

The parallel development of contact lens, especially the hydrophilic soft contact lens, permitted correction of aphakia in the infant immediately after surgery, preventing some of the severe amblyopia problems and enabled the adult monocular aphake to achieve binocularity. Presently, the development of the intraocular lens promises to provide even more improvement in vision. This is an inert plastic lens placed inside the eye at the time of removing cataract. Although many of these lenses are in use today, this is still a controversial technique and requires much more development particularly in materials used, in order to assure its success.

Unfortunately, with all these marvels of technology and surgery other problems arose. Patients had dramatic well-executed "successful" cataract operations only to find that they still couldn't see, or saw well shortly after surgery, but after a few months their vision declined to 20/50, 20/70, 20/200 and the Irvine-Gass Syndrome of cystoid macular degeneration was evident. The cause still is not clear and neither is the treatment. The result, however, is a person with good peripheral vision and poor central vision. This retinal macular disease sometimes resolves itself completely over months to a year, but sometimes it does not. These patients, in spite of having had normal vision prior to developing cataracts and despite good and uncomplicated surgery, and despite fitting with contact lenses or intraocular lenses, cannot drive, often cannot read average size print, and become visually disabled and in need of low vision aids and counselling.

Glaucoma, despite many advances, continues to be an eye disease that is difficult to diagnose early, is difficult to treat satisfactorily over prolonged periods of time. Also it often progresses slowly over many years despite medical and surgical treatment. The typical glaucoma patient one sees in any practice is the patient who is unhappy with his diagnosis, unhappy with his treatment and fearful

of the future. His vision often fluctuates from excellent to badly blurred depending on when he has instilled his drops. He tends to forget or avoid medication because he often feels better without it and tends to avoid surgery because of the risks. He may give up night driving because of his poor dark adaptation. He may have work problems, especially if he deals with white collar work because of his blurred vision each time he uses his drops. Because his peripheral vision may be poor, though his central vision is good, he may have both work and recreational problems.

The "Ocuser," a small oval membrane containing Pilocarpine which can be inserted under the lid and remain in place for a week at a time while continuously releasing small amounts of the drug, provides relief for some of these people. There is less blur and not the constant need to remember to instill drops every three to four hours. Unfortunately, only a moderate to small number of patients, at least in my practice, tolerates it well, and most give it up after a few weeks to return to drops and blur. Trabeculectomy is a microsurgical operation done for certain types of glaucoma that offers fewer complications than prior surgery. However, like other glaucoma surgery, it is not 100% successful.

Although the patient may maintain good usable vision most of his life, the patient under treatment for glaucoma does not have "normal" vision and finds it difficult to adjust to a world that does not consider him legally blind, or industrially blind, and seems to offer little to him than several more pairs of glasses. What then does one do with these patients who have low vision but not good vision-reduced vision but not blindness? Aside from some counselling and trials of simple low vision aids in the ophthalmologist's office, they are probably best referred to centers throughout the country specializing in low vision. Most cities of any size now have some low-vision referral services. In San Francisco, patients can be referred to the San Francisco Lighthouse for the Blind or to the Pacific Medical Center low vision service, the California State Department of Rehabilitation, or the Variety Club Blind Babies Foundation. One of the large developing problems, however, is eligibility for help. Of sixteen agencies listed in a Directory for Services for the Visually Handicapped in the San Francisco Bay Area for 1976, only 4 have eligibility at a 20/70 level of vision. The rest require 20/200 or less. People with 20/50 or 20/60 vision, although they can no longer have a driver's license and are no longer able to continue the work they have been trained to do, are seldom eligible for any assistance. With the enormous number of partially-sighted people noted at the beginning of this paper, perhaps greater emphasis need be placed on helping them too.

A CLEAR PERSPECTIVE ON LOW VISION

by

August Colenbrander, M.D.
Pacific Medical Center
San Francisco, California

More people are BLINDEd by DEFINITION then by any other cause.

Jahoda

Three Levels

The goal of this presentation is to try to get a clear perspective on the subject of today's symposium, Low Vision. What is low vision? How large is the low vision population? How can their needs and capabilities be best described? What can be done to bring more clarity in the terms used?

Various authors at various times have used different terms. Words like partially-sighted and partially-blind indicate what these people are not. They are not quite sighted, and they are not quite blind. They reside between blindness and normal vision, and the two words low vision are most appropriate to indicate that. The word vision differentiates them from those who are blind; the word low identifies their vision as less then normal.

LEGALLY SEEING	NORMAL VISION	NORMAL NEAR-NORMAL
	LOW VISION	MODERATE SEVERE PROFOUND
LEGALLY BLIND	BLINDNESS	NEAR-BLIND BLIND

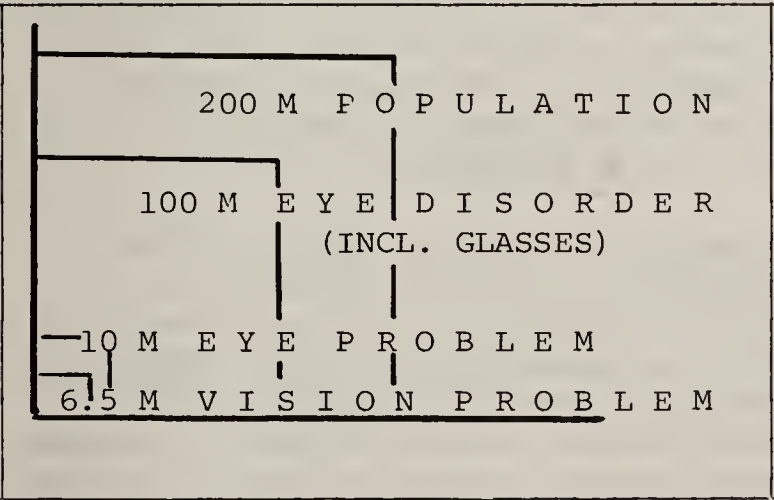
To divide the spectrum of visual capabilities into three levels, namely, normal vision, low vision, and blindness is a deviation from the traditional distinction between those who are "legally seeing" and those who are "legally

blind." This simplistic dichotomy may have served those with normal vision and those with no effective vision. But, it has seriously neglected those with low vision. By lumping them with the normally sighted, their problems have often been ignored. To lump them with the blind is to ignore their visual potential.

It is an important step forward that the recognition of three levels is now part of the International Classification of Diseases (Ninth Revision, recently adopted by the World Health Organization) (1) and will be mandatory for international reporting on January 1, 1979. For more detailed reporting, a further subdivision into seven categories is available.

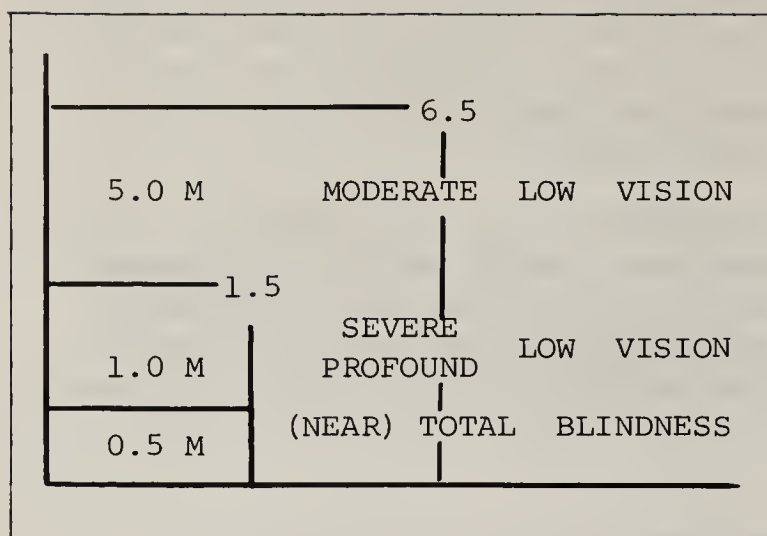
Statistics

If international reporting now requires those three categories, do we have any idea how many individuals fit into each group? Unfortunately, most statistics are extremely poor in this regard. In 1972 Goldish derived some estimates in a study for the American Foundation for the Blind (5). More recently (1976), the Westat Group did a study for the National Eye Institute (6). The figures presented here have been culled from these two reports. They are given only as an indication of order of magnitude and have no claim to accuracy. Indeed, since the statistics are so gross, it is probably desirable to round them to the nearest million or so.



The population figure for the United States is about 200 million. Goldish estimates that about half, or some 100 million individuals, have some eye disorder. This figure includes the vast number of those who maintain

normal vision with the help of glasses. However, this is not the population with which this article is concerned. The Westat Report estimates that there are about 10 million individuals with a more serious problem in one or both eyes. This still includes a number of people with good vision in one eye. Goldish estimates the number of those with a vision problem--that is, a problem in both eyes--at about 6 1/2 million. This is the target population dealt with in this article. Let us accept the estimate and look at this group in more detail.



Both Goldish and Westat estimate that there are about 1 1/2 million individuals with severely-impaired vision. This leaves about 5 million individuals in the category of moderate impairment. Of those with a severe visual impairment it is generally

estimated that as many as three-quarters have residual vision. Assuming that the estimates of totally and near-totally blind are reasonable, one may assume that one million are in the categories of severe and profound low vision, and one-half million in those for totally and near-totally blind.

The total low vision population is thus estimated at around 6 million. You may ask, "Why estimate?" Is there no registration? Unfortunately not. The only concept recognized in registration, thus far, is legal blindness, and legal blindness includes anything from severe low vision to total blindness. It appears that only around one-half million individuals are registered as legally blind. It follows that some five million individuals are not registered because there presently is no category for moderate low vision. Neither are about one million of those with severe or profound low vision registered. Various reasons may be suggested. Some may not need the assistance and services; others may be too proud to ask for it. Others, again, simply don't know what is available.

This summarizes the information available today about the incidence of low vision. From a statistical point of view, our knowledge is rather poor. But, from a practical point of view it is sufficient to know that there is a large population to be served, a population many times larger than the traditional group of the registered "legally blind." The existence of the low vision interest group in AAWB and of this symposium on the general program today are evidence that the professionals are ready and willing to serve. While serving, let us also pay attention to gathering more data and using more accurate terminology so that we can gather a better data base in the future.

Visual Disorders, Visual Impairment, Visual Disability and Visual Handicap

Words that are frequently used in connection with low vision are visual disorders, visual impairment, visual disability and visual

handicap. Let us place these words in a sequence and look at each of them.

When talking about visual disorders, we think of the components of the visual system and of their diseases. Examples of visual disorders include diseases of the normally clear media (corneal opacities, cataracts), diseases of the retina (inflammations, degenerations, scars), and diseases of the optic nerve and of those parts of the brain involved in vision.

VISUAL IMPAIRMENT	
DESCRIBES:	REDUCED FUNCTION OF ORGAN
SUCH AS:	VISUAL ACUITY
	VISUAL FIELD
	BINOCULAR VISION - MOTILITY
	COLOR VISION
	NIGHT VISION

Speaking about visual impairment we widen our view. We no longer look at the pathology of the component parts, but at the performance of the visual organ as a unit. Varying degrees of visual impairment can be measured

in terms of specific visual tests including visual acuity, visual fields, binocular vision, color vision, and night vision.

VISUAL IMPAIRMENT		
	VISUAL ACUITY	OR VISUAL FIELD (DIAMETER)
MODERATE	20/70 OR LESS	60° OR LESS
SEVERE	20/200 OR LESS	20° OR LESS
PROFOUND	CF 8' OR LESS	10° OR LESS
NEAR-TOTAL	CF 3' OR LESS	5° OR LESS
TOTAL	N.L.P.	N.L.P.

Guidelines developed for the new International Classification of Diseases (ICD) (1) and its American adaptation (ICD-9-CM) (2) define levels of visual impairment as they relate to visual acuity and visual

fields. The table illustrates that the level of "severe visual impairment" corresponds to what is commonly known as "legal blindness" in this country (see also Appendix I).

VISUAL DISABILITY	
DESCRIBES:	REDUCED ABILITIES OF INDIVIDUAL
SUCH AS:	READING SKILLS
	MOBILITY SKILLS - ORIENTATION
	DAILY LIVING SKILLS
	VOCATIONAL SKILLS

Turning to visual disability, we again widen our perspective. We no longer look at a specific organ but at the abilities of the person-as-a-whole. To measure visual abilities we consider skills that

involve vision, such as reading skills, mobility skills and orientation, daily living skills and vocational skills. Unfortunately, no accurate measuring scales are available for these skills, but some general statements can be made. To do so, a distinction should be made between abilities requiring detailed vision, such as reading, and abilities requiring gross vision, such as mobility.

An individual may be said to have moderate low vision if he is able to read with near-normal speed and endurance, but needs special aids or techniques to do so.

VISUAL DISABILITY		
	DETAIL VISION	GROSS VISION
LOW VISION		
MODERATE	NORMAL WITH AIDS	
SEVERE	SLOW WITH AIDS	USEFUL
PROFOUND	MARGINAL	HELPFUL
NEAR-BLIND		UNRELIABLE
BLIND		

People with severe low vision can read and write with aids, but generally do so more slowly than those with normal vision. Their gross vision may not be fully adequate, but is quite useful.

At the profound low vision level, reading and other detailed visual tasks become quite marginal. Only the highly motivated manage to do some visual reading. Gross vision also becomes less adequate, but it is still helpful, especially in a familiar environment, and when supported by special attention to auditory and other nonvisual cues.

In the near-blind group, even gross vision becomes unreliable and is helpful only under ideal circumstances.

There is a general parallel between levels of impairment and levels of disability, but for any individual much depends on motivation and training. It is the task of a low vision service to help individuals at any level of visual impairment to make the best possible use of their residual vision, and to make them aware that a visual impairment does not necessarily imply visual disability. When we have to tell patients that "nothing can be done" about their visual impairment, we should also make them aware of how much can be done about their disabilities.

Visual disability can be reduced in two ways. Vision substitution techniques can be used to improve those skills that do not involve vision. Increased reliance on memory and on hearing are examples, and so are Braille and the use of a long white cane. In addition, the low vision patient can be helped by vision enhancement. Vision can be enhanced either through devices such as magnifiers, telescopic aids, colored filters, or through simple techniques such as underlining and finger tracking. Emphasis on the use of available vision is one reason to avoid terms like "legal blindness." To call individuals with any degree of vision "blind" creates a self-image of not being able to function visually. Such a self-image often stands in the way of successful visual rehabilitation.

VISUAL HANDICAP	
DESCRIBES:	NEED FOR EXTRA EFFORT REDUCED INDEPENDENCE
SUCH AS:	PHYSICAL INDEPENDENCE MOBILITY ECONOMIC INDEPENDENCE EMPLOYMENT SOCIAL INTEGRATION

The last term to be discussed is visual handicap. On the golf course or on the racetrack and handicap indicates the extra effort an individual has to put forward in order to win. Visual handicap, similarly, indicates the need for extra effort because of visual

loss. It is often reflected in a reduced degree of independence. The handicap dimension thus again widens our perspective, this time from the individual to the society in which he functions.

Handicaps become evident as individuals cope with their environments. This suggests that there are two ways to reduce the experience of handicap. One way is to improve the abilities of the individual; the other is to reduce the demands of the environment. Ramps can reduce the handicaps experienced by the physically disabled; proper illumination, use of color and contrasts can do the same for the visually impaired. Coworkers and family members are also part of the environment. Educating them about low vision and correcting unrealistic expectations may further help to reduce the feeling of handicap and low independence.

The International Classification of Handicaps (4) suggests five parameters to measure the degree of dependence or independence. The proposed scales are summarized in Appendix II.

Professional Roles

Having defined these four perspectives on visual loss, it is now possible to define the various professional roles needed to help low vision individuals cope with their problems.

Medical care is obviously the domain of the ophthalmologist. Its impact is on visual disorders and on visual impairment, but traditionally does not address the areas of visual disability and visual handicap.

VISUAL DISORDER	VISUAL IMPAIRMENT	VISUAL DISABILITY	VISUAL HANDICAP	The use of <u>visual aids</u> cannot change the pathology, but can reduce impairment and can significantly enhance abilities. This is the domain of both ophthalmologists and optometrists. Interest
PATHOLOGY	ORGAN FUNCTION	VISUAL SKILLS	EFFORT DEPENDENCE	
MEDIA RETINA BRAIN	ACUITY FIELD	READING MOBILITY LIVING	PHYSICAL ECONOMIC SOCIAL	
MEDICAL CARE				
	VISUAL AIDS			
		EDUCATION		

in this area of service to the individual rather than to the eyes alone is rapidly expanding in both professionals. Successful prescription of visual aids requires a careful matching of the aid to visual impairment as well as to the required tasks and abilities.

The third area of support is broadly labeled as education. This area includes all forms of training and instruction, as well as counseling; education of the patient or client, as well as of the environment; education in the use of aids, as well as in attitudes and techniques. This category includes the wide variety of workers represented in AAWB, from social workers and classroom teachers to mobility instructors, vocational advisors, and psychological counsellors. Their efforts are needed to complete the spectrum of low vision care.

It follows that comprehensive low vision care cannot be provided by any one professional in isolation. It truly should be an interprofessional effort.

Blindness

Since this is a convention of workers for the "blind," we may end by asking how the concepts of visual impairment, visual disability, and visual handicap relate to the concept of blindness. There are several reasons why in this discussion the word "blindness" has been deemphasized. One has already been mentioned--to call a patient with low vision blind may well reduce his self-esteem and stand in the way of optimal utilization of residual vision.

Furthermore, the word "blindness" tends to promote black and white thinking--either one is blind, or one can see. The legal blindness concept does not recognize that there is an entire spectrum of visual capabilities, and that there is nothing magic about the one level at which the legislature has decided that one becomes eligible for a tax break and for certain other benefits. Indeed, in the educational system other guidelines are used and students generally become eligible for educational assistance at the 20/70 visual acuity level. Looking around the world, even more confusion is evident. A 1966 WHO study on the incidence of blindness found 65 different definitions of blindness used in different countries.

BLINDNESS IS . . .

20/200 or Less	In	18 Countries
Less than 20/200		7 Countries
3/60 or Less		10 Countries
Less than 3/60		6 Countries
1/60 or Less		6 Countries
Less than 1/60		6 Countries

WHO Report 1966

This is not as surprising as it may sound. We should not forget that the concept we now call "legal" blindness was originally called "economic blindness." Economic conditions vary, and what is an acceptable guideline for social benefits in one

country may not fit the conditions in other countries. There is little hope that we can eliminate these differences. Rather than arguing about the question of whether one definition of blindness is more appropriate than the other, we should emphasize the concepts of impairment, disability, and handicap, which can be more accurately defined. Some examples of how this would affect presently used terminology are appropriate.

SEVERE VISUAL IMPAIRMENT	
LEGAL BLINDNESS	
Visual Acuity	20/200 or Less
or:	
Visual Field	20° or Less

The definition of legal blindness is based on the measurement of visual impairment. Substituting the term "severe visual impairment" where "legal blindness" now appears in legislation and regulations would not change any estab-

lished rights, but would only make it easier to recognize additional benefits, such as educational assistance, for other levels of impairment.

SEVERE VISUAL		DISABILITY
		IMPAIRMENT
Unable to read Newsprint		
with either eye,		
even with use of glasses		

In health surveys and questionnaires the question is often asked, "Do you have problems reading newsprint, even with glasses?" A positive answer is usually referred to as "severe visual impairment."

Since this question refers to an ability of the individual rather than to a condition of the eye, the term "severe visual disability" would be more appropriate.

VISUAL HANDICAP	
BLINDNESS	
Insufficient Sight	
For	
Regular Employment	

In several countries blindness is also defined as "visual loss that precludes normal employment." This definition speaks to the individual's position in the society and to his socio-economic independence.

It is a definition of visual handicap.

Some of the apparent discrepancies in the statistical data discussed earlier would have been clarified, if the distinction

between impairment, disability and handicap criteria had been made more clearly. Promoting these more accurate definitions and leaving the word blindness for less defined colloquial use is the best way to counter the famous pronouncement that "more people are blinded by definition than by any other cause."

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APPENDIX I

CLASSIFICATION		LEVELS OF VISUAL IMPAIRMENT	Additional descriptors which may be encountered
"legal"	WHO	Visual acuity and/or visual field limitation (whichever is worse)	
L E G A L B L I N D N E S S (USA) both eyes	(NEAR-) NORMAL VISION	RANGE OF NORMAL VISION 20/10 20/13 20/16 20/20 20/25 2.0 1.6 1.25 1.0 0.8	
		NEAR-NORMAL VISION 20/30 20/40 20/50 20/60 0.7 0.6 0.5 0.4 0.3	
	L O W V I S I O N	MODERATE VISUAL IMPAIRMENT 20/70 20/80 20/100 20/125 20/160 0.25 0.20 0.16 0.12	Moderate low vision
		SEVERE VISUAL IMPAIRMENT 20/200 20/250 20/320 20/400 0.10 0.08 0.06 0.05 Visual field: 20 degrees or less	Severe low vision "Legal" Blindness
	B L I N D N E S S (WHO) one or both eyes	PROFOUND VISUAL IMPAIRMENT 20/500 20/630 20/800 20/1000 Count fingers: less than 3m(10 ft.) Visual field: 10 degrees or less	Profound low vision Moderate blindness
		NEAR-TOTAL VISUAL IMPAIRMENT Visual acuity: less than 0.02 (20/1000) Count fingers: 1m (3 ft.) or less Hand movements: 5m (15 ft.) or less Light projection, light perception Visual field: 5 degrees or less	Severe blindness Near-Total blindness
		TOTAL VISUAL IMPAIRMENT No light perception (NLP)	TOTAL blindness

Visual acuity refers to best achievable acuity with correction. Non-listed Snellen fractions may be classified by converting to the nearest decimal equivalent, e.g., 10/200=0.05, 6/30=0.20

CF (count fingers) without designation of distance, may be classified to profound impairment.

HM (hand motion) without designation of distance, may be classified to near-total impairment.

Visual field measurements refer to the largest field diameter for a 1/100 white test object.

APPENDIX II

CLASSIFICATION OF HANDICAPS

Summary of International Classification of Handicaps

Physical Independence

- 0 Fully independent
- 1 Dependent on aids and appliances
- 2 Dependent on modified environment
- 3 Difficulty with certain activities
- 4 Dependent on others for certain activities
- 5 Difficulty with critical functions (such as feeding, excretion)
- 6 Dependent on others for critical functions
- 7 Dependent on special care
- 8 Dependent on continual care

Mobility

- 0 Fully mobile
- 1 Variable or intermittent restriction
- 2 Difficult mobility, travel may take longer
- 3 Reduced mobility, reduced range
- 4 Limited to neighborhood
- 5 Confined to dwelling
- 6 Confined to room
- 7 Confined to chair
- 8 Confined to bed

Economic Independence

- 0 Fully self-sufficient
- 1 Self-sufficient, but reduced economic status
- 2 Self-sufficient, with support from others
- 3 Partially self-sufficient
- 4 Not self-sufficient
- 8 Child, not expected to be self-sufficient

Employment

- 0 Follows customary occupation
- 1 Intermittent inability in customary occupation
- 2 Full-time in other than customary occupation
- 3 Less than full-time occupation
- 4 Limited in type and kind of occupation
- 5 Limited in type, kind and time
- 6 Unable to follow any occupation

Social Integration

- 0 Fully integrated
- 1 Nonspecific disadvantage
- 2 Specific disadvantage, reducing quality of life
- 3 Curtailed social relationships
- 4 Behavioral disorders
- 5 Socially isolated
- 6 Unable to relate to others

IMPACT OF LOW VISION SERVICES ON A MULTIPLE SERVICE AGENCY

by

Milton A. Jahoda, A.C.S.W.

Cincinnati Association for the Blind

INTRODUCTION

The opportunity to discuss some of the non-medical approaches which a low vision service impacts on a multiple service agency is welcomed for many reasons. The impact can be felt in many ways--specific, concrete ways such as administrative concerns for financing, staffing, providing for equipment and for space, and provision for expansion and growth that will inevitably follow the development of a low vision service. Also, of equal importance, the impact is evident in more subtle, less tangible ways. This paper will deal briefly with both the concrete, specific aspects of a low vision program as well as the less concrete, but no less significant, issues of philosophy, agency commitment, and service delivery. With reference to some of the concrete issues such as space requirements, equipment and costs, it should be mentioned that these are discussed more adequately in an article that appeared in the Journal of Visual Impairment and Blindness (Sprague, 1977).

Information based on the most recent United States Bureau of the Census Statistical Abstracts (1976) indicates that there is a potential consumer population that may be as high as 9.5 million visually-impaired individuals who may benefit from low vision aids. The same source indicates that the number of people whose visual acuity or field is greater than those included in the legal definition of blindness, but who have a visual impairment to severe that it cannot be corrected by ordinary eyeglasses, is twenty times greater than the population that most agencies for the blind are now serving. Certainly not all these people will request low vision aids, or even be able to benefit from them. Nevertheless, it is readily apparent that one of the ways in which a low vision program will impact on an established agency for the blind is to increase the case load substantially.

Philosophy

The increase in the number of persons who are not legally blind but who have severe impairment in functional vision has gradually resulted in a philosophical change in many agencies for the blind. This change is related both to a new recognition of the needs of this group as well as a recognition of the actual volume of people in the population who are potential consumers of a low vision service. An established agency for the blind that wishes to serve this population needs to recognize that this step represents a philosophical shift requiring Board sanction and commitment. The recent proliferation of low vision clinics indicates that the need is recognized and being met. Included in the agency decision are such issues as how many other services, such as orientation and mobility, rehabilitation teaching, adjustment counseling, vocational adjustment, and job-seeking skills, is the agency for the blind willing to provide for this population. These are decisions each agency will need to evaluate. Currently, thirty percent of our low vision clients receive other services.

Staff

Decisions regarding funding and space allocations in a low vision program are contingent upon staffing. In a beginning program, at a minimum an ophthalmologist or optometrist with consultation and supervision from an ophthalmologist, a low vision technician, social worker, the clerical support are necessary. For a low vision service in an established agency, social work staff already available may be used during the early development of the program. As the service develops, becomes better known, and utilization increases, it is important that at least one full time social worker be assigned to the low vision program. Most people coming to a low vision lens program are anxious, may have unrealistic expectations of what the program can do for them, may have unresolved feelings regarding their vision loss, and often have unmet social or emotional needs that may result in appropriate referral to other community resources or to other services within the agency.

Often we are puzzled when a person whose eye condition appears to make him or her a perfect candidate for low vision aids is resistant to this kind of help. We find it hard to understand someone who has had to manage with impaired vision turning his or her back on the opportunity to use aids that will increase functional vision. But, it happens every day. If this individual is still struggling with a changed body image as a result of a recent visual loss, is it any wonder that the promises of a low vision aid seem confusing if not seductive at one extreme or an answer to all the unrealistic longings and fantasies for a return of normal sight at the other?

In helping low vision clients make maximal use of vision aids, acuity and eye conditions are not the only assessments to be made. Accurate assessment of client expectations is essential. Careful analysis of how much investment of time and effort the client is willing or able to make in practicing and learning to use the prescribed aid is also critical. Having a skilled, sensitive social worker as part of the low vision team is essential in maximizing the success rate of the clinic.

A low vision program interlaces with every other service the agency gives, such as mobility, rehabilitation teaching and vocational services. Professional staff from these fields are all involved in the process of providing a vision rehabilitation program. One does not provide a low vision service in a vacuum. Not only does a client need evaluation and training in the use of an aid--the client often needs assistance from rehabilitation professionals in how to get maximal benefit from the aid in mobility, recreation, daily living, on the job, in the home, or at school. These disciplines are involved in the service delivery system of the low vision program as needed.

Costs

Start-up money for equipping a low vision clinic is estimated to be between \$18,500 (Jose et al., 1975) and \$26,500 (Sprague, 1977). For specific equipment needs, it is suggested that reference be made to the Sprague article, mentioned previously. In addition to the basic equipment, additional costs such as office space, utilities, other overhead expenses, a waiting room which may not be necessary if the existing waiting room of the agency can be utilized, staff salaries and fringe benefits, must be considered. While many of these costs may be offset through fees, third-party payers such as Medicare, and/or the state vocational rehabilitation agency, the population using low vision services includes a large proportion of older people on fixed or limited incomes. For this group, a method of subsidizing the cost of the low vision evaluation and prescribed aids is necessary. Title XX of the Social Security Act may be a resource for some of the low vision service components.

Money is needed for initial staff training including provision for visiting and observing other low vision programs in operation. Ongoing annual budgets need to include money for continuing education for low vision staff personnel.

As the clinic services become known in the community, additional staff to provide the necessary examinations and to eliminate long waiting lists will be needed. As the low vision staff becomes more proficient in developing a comprehensive understanding of the low vision client's needs and visual conditions, the success rate increases. This means that more aids are used successfully by clients. Thus, increased utilization will affect growth of the service and the budget.

Space Requirements

Minimally, a large well-lighted room is needed with adequate space for a patient to read a Snellen chart at ten feet, space for a desk for the doctor or technician, a second desk for the person assisting the doctor or technician, and space for a table that the examiner and patient can use to try different aids. This room should also be large enough for examining equipment, a cabinet for trial frames, and a cabinet for the inventory of aids used in the evaluation. Space for stock must be provided in the evaluation room or a room adjacent to it. A waiting room is needed. The main lobby of an agency is sufficient, but a separate room adjacent to the clinic is preferable. Separate office space should be provided for social work personnel who are assigned to work with the patient throughout the process. The social worker needs space to interview clients in privacy, keep records, dictate, and make phone calls. Ideally, more than one evaluation room is desirable. With this arrangement, the client may be completely evaluated and have aids prescribed in one day. Two rooms, in which a technician and an ophthalmologist can be working concurrently in a complementary capacity, can reduce the number, and therefore the cost, of multiple clinic visits. The low vision service area should be accessible by wheel chair and walkers, generally free from architectural barriers, and located where sound levels are low.

Public Education

Political considerations:

Community support is essential for providing a low vision service, and no sector of the community is more important than the medical. The acceptance and cooperation of ophthalmologists are critical which means this group needs to be actively involved in the initial planning and developmental stages of a low vision service. Any developments that the medical community interprets as "socialized medicine" or in any way as not meeting the high standards that prevail in the community for eye care or as impingement on the patient-doctor relationship of the referring physician will have tremendous impact on the success or failure of a program. In our community, all referrals for low vision service come through ophthalmologists and must be accompanied by current eye examination reports. Critical to continued cooperation of the medical community is prompt attention to all referrals from the clinic medical director, an ophthalmologist. In early stages of the clinic development, educational articles about the program were written for the Journal of Medicine published by the local Academy of Medicine. On-going public relations and education with this group continue, with talks being given to the medical society by clinic staff from time to time, and liaison maintained by the clinic medical director.

Other considerations:

In addition to the public education responsibility with eye doctors, there are other important considerations for the general community. One of the most important is to deliver consistently the message of what low vision aid service is and what it is not. Even with the best possible interpretation, client expectations too often are fixed solidly on a return of normal vision, rather than using low vision aids to maximize residual vision.

Low vision care is a relatively new concept. In addition to letting the public know of available services, an agency must actively work to counter such myths as, "Not being able to read a newspaper is a part of growing old and there's nothing that can be done about it," or "Using your remaining vision will hurt your eyes." In spite of efforts to educate the public about low vision services, there are still many people who are unaware that there is possible help. In a survey of nursing homes, it was found that as many as 30 percent of the patients could benefit from some type of low vision service. School children also can benefit from visual stimulation or training, and their needs for low vision aids are just beginning to be recognized.

Operating a low vision service in conjunction with an agency for the blind helps reduce the belief that blindness always involves a total loss of sight. This belief and the fears surrounding it may keep many partially sighted persons from seeking other services they need from an "agency for the blind." With the low vision service operating within such an agency, public education emphasis on the partially sighted person provides an acceptable route for many ophthalmologists and human services workers to introduce a client into an "agency for the blind" service delivery system.

In our community the clinic has been publicized through television, radio, and newspaper articles. A visit and presentation on the clinic are included in every agency tour, of which there are many. The agency also takes part in community exhibits and health fairs in which aids are displayed. Because it is a service which needs special interpretation, a brochure describing the program has been given wide distribution.

Service Delivery System

The service delivery system is designed with the recognition that what happens to the client before and after he or she visits the clinic is as important to the success of the service as is the clinic visit itself. The feelings and attitudes the client has about his vision loss as well as his overall adjustment have a profound effect on his ability to use the service. Visual acuity is not a good measurement of visual efficiency. It sometimes appears that

more people have been blinded by definition than by any other cause. The delivery system also is designed to take cognizant of the fact that the patient may have other needs in addition to a low vision evaluation. It is designed to acquaint and refer the client to other services within the agency or community when appropriate. A low vision service within an agency for the blind complements the entire service delivery system. It can be a valuable referral point for low vision clients in need of rehabilitation or mobility instruction or social services. These departments can also make timely referrals to the low vision service.

Because of the progressive nature of many eye diseases and the continually evolving needs of clients, low vision programs may anticipate a number of clients frequently returning for new or different aids. Some individuals will require stronger magnifications, others may reach a point where aids are no longer useful or practical. Reevaluations are appropriate when an earlier prescribed aid is no longer helpful, or an aid has been prescribed for more than two or three years. The specific eye condition or diagnosis is important in determining frequency of reexaminations.

Successful service delivery systems undoubtedly take many forms. What we are describing is not intended as the sine qua non, but represents the delivery system our agency has developed over a period of time that works best for us. We believe any service delivery system will have the same elements, although possibly put together in a different way.

All low vision aid applicants are interviewed initially by a social worker. Included in this interview are a brief, nontechnical explanation of the low vision program, and a preliminary exploration of the applicant's goals and expectations, and level of motivation for using low vision aids. Low vision applicants may anticipate unrealistic improvement in visual acuity. They may be unaware of the time and patience required for developing the skills necessary for the effective use of a visual aid. Many misconceptions can be cleared up at this point of entry into the system. For some people who have made a kind of adaptation to a visual loss, there is actually a fear of increasing visual function as they anticipate more may be expected of them than of which they feel capable. They may fear a loss in disability assistance, either financial or emotional. They may fear that an aid will result in only a temporary gain, and be fearful of the disappointment if it does not perform to their expectations.

Some clients may recognize that there are fluctuations in their ability to see, but may not have realized the connection with some medicines, including certain diabetic medications, antihistamines, and tranquilizers. Some diseases such as diabetes may create vision fluctuations as a result of changes in diet and exercise. As with many other physiological phenomena, emotions often can, and do, affect visual functioning.

The social worker also fills out a form that contains detailed information about the person's functional vision. The social worker also tries to assess any other difficulties that may affect a person's ability to use the aid, including physical disabilities, anxiety and intellectual capacity, and most importantly, what the client most wants to see.

Following the social work assessment, the client is evaluated by the low vision technician. After this evaluation, the patient is loaned the low vision aids that the patient and technician together decide seem to be most helpful. An appointment with the ophthalmologist is scheduled, but follow-up by the social worker takes place immediately--in the client's home, at school, or wherever the client is using the aids. Quick follow-up is important to give clients the support they may need during those first critical days. The client receives instruction in how to use the aid from the technician, and the social worker often reinforces this training. As a result of follow-up, a person may be scheduled for additional visits with the technician if he or she is experiencing difficulty that can be resolved by another visit. The client is then seen by the ophthalmologist who may prescribe the aids loaned by the technician or may prescribe new or additional aids. All clients are seen by an ophthalmologist before aids are prescribed or dispensed.

Two-week, six-month, and one-year follow-up visits are routine. This schedule affords an opportunity to assess whether the client has continued to use the aids prescribed and to encourage a return to the clinic if there are changes in vision.

Summary

In addition to the most competent medical and technical staff possible, a low vision program requires a philosophical commitment from the governing body of the agency, delineation of those to whom the service will be offered, and what, if any, other agency services will be available to the low vision consumer. Social and emotional assessments by qualified social workers are an integral part of the service and an essential component of a low vision team. Space, equipment, and funding needs will vary, depending on the size of the population to be served. After they have been in operation for several years, most low vision programs find that expansion is necessary. An increase in referrals and applicants dictates this normal growth. Provision for expansion in the initial planning stages may avoid unnecessary and costly space relocations or modifications, and assist in long-range planning by anticipating a need for additional staff and equipment. Opportunities for third-party payment for low vision service through Medicare and Title XX and other insurance contracts are increasing and need to be maximized.

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PRIORITIES AND PITFALLS

IN LOW VISION CARE

by

Bruce P. Rosenthal, O.D., F.A.A.O.

Low Vision Clinician

The New York Lighthouse Low Vision Service

and

Assistant Professor

The State University of New York College of Optometry

The first priority of the New York Lighthouse Low Vision Service is to provide complete, quality low vision care for people who have impaired vision. Low vision care cannot be supplied from a low vision kit or by trial and error. To achieve the best quality of care we must continue to upgrade the professions by bringing together ophthalmologists, optometrists, assistants, mobility instructors, rehabilitation counselors, social workers, teachers, and other professionals. In this way we can all be part of the common framework that enables all disciplines to cooperate in giving the best vision care.

Before we can talk about our mutual interest in low vision, it is appropriate to present the definitions used by the New York Lighthouse Low Vision Service to describe low vision and the low vision patient.

Low vision is subnormal acuity or abnormal visual fields resulting from a disorder in the visual system. The body of knowledge called low vision describes the art of management of the low vision patient. The low vision patient is an individual whose visual performance is decreased resulting from an eye disorder.

Ingredients of the Low Vision Examination are the primary concern of the optometrist and ophthalmologist. The areas to be emphasized in evaluating and prescribing for the patient are:

1. History
2. Diagnosis of the ocular disorder
3. Visual acuity
4. Visual field.

History

The examination begins with a pertinent case history rather than a fatiguing barrage of endless questions. The examiner is concerned with the patient's medical and eye history as well as the task objectives in his/her occupation, everyday life, and leisure time.

The genetic history indicates the possibility of whether or not a condition will be transmitted to future generations. For example, retinitis pigmentosa and albinism are conditions which have three possible modes of transmission. Referral for genetic counseling by genetic specialists may alleviate anxieties about transmitting the condition or provide clues as to what percent of the offspring may inherit the condition.

Diagnosis of the Ocular Disorder

The diagnosis whether of recent onset, or of congenital origin, is extremely important in knowing what to look for and anticipate in the low vision examination. If for example, the history reveals diabetes, fluctuation in vision or a possible sudden decrease may be anticipated. Multiple aids may need to be prescribed in anticipation of the fluctuation in vision.

Diagnosis is also important in determining the possibility of progression or the stability of a condition. The history along with the diagnostic tests provides the first indication of the type of care the patient is going to require.

Visual Acuity

Visual acuity is related to diagnosis as well as the visual field. A vision test is useful as a basic indicator of the amount of impairment caused by the eye disease. The acuity measurement may also be used to determine the amount of magnification necessary for the desired tasks. Low vision acuity testing is modified to determine functional acuity rather than to record meaningless numbers.

Visual Field

The pattern of the visual field loss plays an important role in patient management as well as in the prescribing of optical aids. Advanced glaucoma and retinitis pigmentosa are examples of diseases causing the type of peripheral field loss that interferes with independent mobility. The research efforts to find help for these

difficult cases have emphasized prisms, mirrors, and reverse telescopes to expand the visual field. Despite the publicity, no one technique seems to be universally successful. One of the pitfalls in research to this date has been the lack of control studies.

Hemianopia management has also received widespread publicity. Hemianopia is a type of severe field impairment that may interfere with efficient job performance as well as with the ability to drive. Remediation has led to experimental use of prisms and mirrors. Treatment has been time consuming, highly individualized and often is most easily managed by instructing the patient to turn the head. Orientation and mobility instructors may provide the individual with more valuable clues than any special optical aids.

The importance of accurate visual fields cannot be overestimated. New instrumentation facilitates quick and accurate measurement of central and peripheral fields so important to the correct prescription of aids. The examiner also has a permanent field chart for future reference.

Refraction

It is essential for the low vision patient regardless of eye pathology to have an accurate refraction to be sure there are no uncorrected refractive errors such as myopia, hyperopia, astigmatism, or aphakia. An accurate refraction is the foundation for the prescription of an optical aid, but the prescription of appropriate optical and accessory aids depends upon various other factors in the history, diagnosis, visual acuity, visual field, and refraction. The various parameters must be weighed against each other in the prescription depending on the individual patient.

An optical aid may be defined as a device that, by virtue of its optical properties, raises the level of visual performance of the low vision patient. It may be a lens, lens combination, prism, mirror, or electronic (video) magnification.

Optical aids may be grouped as distance and near aids. The near aids may be further subdivided into high plus and microscopic lenses, hand magnifiers, stand magnifiers, and loupes. The majority of patients anticipate a spectacle lens on their first visit. The universal desire is to obtain a lens that provides a comfortable working distance with a wide field of view. However, as the visual acuity decreases, magnification increases and the working distance decreases. Decreased acuity coupled with a peripheral field loss or large central scotoma further complicates the prescribing and acceptance of aids.

Pitfalls in using plus lenses

The stronger we make the plus lens the closer the working distance, the smaller the field, and the more difficult the lens is to use because of the depth of focus. Magnification may not always improve performance because the magnified image may fall on a scotomatous (non-seeing) area on the retina. To counteract at least one of these restrictions, a microscopic doublet lens providing a wider field has been recently developed. A special high plus bifocal design, based on the Benjamin Franklin bifocal, incorporates the strong near prescription with the standard distance correction. This design has been used successfully for general wear and occupational use.

The spectacle low vision aid, however, may not be practical or desirable because of the close working distance. The common hand magnifier provides a greater working distance than a comparable spectacle lens. Hand magnifiers have been successfully used by the majority of low vision patients. These aids come in numerous powers and varieties, are relatively inexpensive, and may be used in many situations. Optically the considerations are similar to those of a spectacle. The stronger the magnifier the smaller the lens and field and the more critical the depth of focus. In addition, the hands must be coordinated in holding magnifier and material. Prescribing aids again depends on the patient's needs, the visual acuity and field.

The stand magnifier provides a greater working distance with the lens set at a fixed focus. The latter feature is especially important in higher magnification where image stability is difficult to maintain. Supplemental illumination may be used in conjunction with any optical aids in general use.

Distance aids

Distance aids are available in standard spectacle correction and in hand held and spectacle mounted telescopes. A refraction to achieve the best distance correction is done prior to considering any telescopic aids. Telescopes often dominate the publicity in the field of low vision because of their public relations appeal. Yet telescopes are only one of many aids prescribed. Hand held varieties are relatively inexpensive, available in powers from 2.5X to 12X. Use of the hand held telescope ranges from viewing the blackboard to picking out numbers on transportation vehicles. The chief disadvantages are having to hold and focus the aid. Also some patients believe that a telescope may reveal the presence of a visual problem.

Sophisticated spectacle mounted telescopes are used as adjuncts when driving, for special occupational needs, and for leisure time activities involving the intermediate area, such as bridge, music, or

chess playing. These special aids, though expensive and noticeable, provide the opportunity to function in the common tasks that patients miss so much. A new breed of telescopes using a roof prism has recently been introduced. The new system will produce a wider field of view and a potentially greater power range in a small telescope (as great as 6 times magnification).

Videomagnification or closed circuit television has received considerable publicity. It should still be considered as an aid to be prescribed as any other optical device is prescribed, after careful professional evaluation of the patient's diagnosis, visual acuity, field and other task requirements. Videomagnification should be included as standard equipment in every low vision clinic.

Summary

The prescribing of low vision aids depends on the diagnostic and prognostic information gained from the low vision examination. For example, the albino with no visual field loss might be successful with a spectacle, hand magnifier, stand magnifier, hand or spectacle mounted telescope, the closed circuit television, and tinted lenses. The advanced glaucoma or retinitis pigmentosa patient with a severe field loss might be successful with the hand or stand magnifier or the videomagnifier. Advanced diabetic and hypertensive patients are often prescribed multiple aids because of the fluctuating visual acuity. Macular degeneration generally responds well to magnification and most types of aids are successfully prescribed if the acuity is not too reduced.

Although this paper has emphasized the role of the ophthalmologist and optometrist, we must be careful to avoid the ultimate pitfall, the impression that low vision optical aids are the only answer in the management of the low vision patient. Remember that the low vision aid is any device that enables the low vision patient to improve visual performance, whether it is a prescribed optical aid, a tape recorder, cane, special lighting or a series of instructional sessions involving a low vision assistant, mobility specialist, vocational counselor or educator.

With the integrated approach, no aid need ever be forgotten in the top drawer.

CONSUMER PARTICIPATION

The three short articles in this section were presented at sessions at the Biennial Meeting of the American Association of Workers for the Blind in July 1977 in Portland, Oregon. They reflect the increasing concern of consumer participation in implementing services for the visually impaired. The first two deal with the administration of a program of a state agency and the reaction of a consumer to services provided by that agency and the need for making them more visible. The third deals with consumer participation in services to the visually impaired provided by our neighbor to the North.

CONSUMER PARTICIPATION IN THE VIRGINIA COMMISSION FOR THE VISUALLY HANDICAPPED

by

Thomas C. Michael, State Supervisor
Department of Vocational Rehabilitation
Virginia Commission for the Visually Handicapped

When we discuss consumer participation in the administration and operation of a state agency, I think we should keep in mind that some consumer participation is actually mandated by Federal law and regulations such as the Rehabilitation Act of 1973 as amended. In addition to mandated consumer involvement, many state agencies that serve the blind have highly structured systems for obtaining consumer participation in the development and implementation of policies and procedures that are designed to deliver services to blind and visually handicapped citizens.

For many years the Virginia Commission for the Visually Handicapped has encouraged and facilitated consumer involvement in the various programs that are administered by the agency. I would like to describe briefly the various mechanisms which our agency has developed to obtain ideas and suggestions from consumers regarding the many services that are provided by the agency.

The Virginia Commission for the Visually Handicapped was established in 1922 by an Act of the General Assembly of Virginia. The agency is governed by a seven member Commission appointed by the Governor. According to state law, two members of the Commission must be legally blind to make certain that blind individuals are involved in the department and implementation of agency policies. It is interesting to note that the legislators of this state realized

the importance of consumer participation 55 years ago. At the present time, three members of the Commission are legally blind.

Our agency has a publication entitled Views and Ventures that is issued bimonthly and contains articles about the various programs and services that are available to blind and visually handicapped individuals in Virginia. The publication is distributed to staff of the agency, interested consumers, consumer groups and other interested agencies and organizations throughout the country. Through this medium, ideas and suggestions are solicited from present and former consumers in an effort to improve programs and to meet the needs of those individuals whom we serve.

In October 1971, the agency established the Advisory Committee on Services which, at that time, was mandated by Section 4 of the Social Security Act. The Committee was composed of Aid to the Blind recipients and was designed to provide our Agency with input from blind and visually handicapped citizens who were in need of financial assistance under that program. Since the Aid to the Blind program was federalized under the Supplemental Security Income program, the Advisory Committee on Services was reorganized in December 1976, to include consumers of all other services that are provided by the agency. The Committee now has 13 members two-thirds of whom must be legally blind. The Committee meets quarterly and the minutes of its meetings which contain their recommendations are forwarded to the Director of the agency for his consideration. The Advisory Committee on Services has provided invaluable advice and consultation in the development and implementation of policies throughout the entire agency.

The Virginia Commission for the Visually Handicapped is fortunate to be one of the agencies for the blind to administer the State Title XX Plan for Social Services for blind and visually handicapped individuals. The State Plan is developed and administered jointly with the Virginia Department of Public Welfare. In the process of developing the State Plan for Social Services for the blind, a Needs Assessment Committee consisting of blind consumers, professional workers in the field of work for the blind, and representatives from other agencies and organizations identifies needed services and recommends various alternatives for meeting the social services needs that exist among the blind and visually handicapped citizens of Virginia. After the proposed State Plan is written, public hearings are scheduled throughout the Commonwealth to give every citizen an opportunity to express opinions and to make additional recommendations regarding the needs of blind persons in Virginia in the area of social services.

The Virginia Rehabilitation Center for the Blind is an integral part of the Virginia Commission for the Visually Handicapped and offers a comprehensive evaluation and personal adjustment training program to blind and visually handicapped clients. In an effort to involve trainees in the planning and development of programs, the Rehabilitation Center has established an advisory committee consisting of four trainees who advise the director of the Center about program

improvement and expansion. In addition, all trainees at the Rehabilitation Center have a meeting scheduled once each week to discuss the various elements of the training program and to make recommendations for changes if indicated.

Our agency has a comprehensive Education Services program that is designed to provide training and consultation services to pre-school and school age children, their parents, and to public and private school personnel in an effort to assure a quality education for blind and visually handicapped children in the Commonwealth. In working with preschool age children, Education Specialists work cooperatively with parents in developing a prescription for developmental training for the children. The parents are full participants in developing the training programs and actually sign off on the prescription that is written for each child. Plans are presently underway to develop a formalized evaluation system for parents of those children who are receiving orientation and mobility instruction under the Education Services Program.

The Virginia State Library for the Visually and Physically Handicapped is another important system delivery component of the Virginia Commission for the Visually Handicapped. All recipients of Library services receive a quarterly newsletter that encourages ideas and suggestions for improving Library services in Virginia. In addition, the Library has established an advisory committee in cooperation with the Virginia Federation of the Blind in an effort to obtain consumer involvement and to expedite Library services throughout the state. Readers are also encouraged to telephone the Library collect to discuss problems and to facilitate the provision of Library services within the Commonwealth.

Our agency is also fortunate to administer and supervise two sheltered workshops--the Virginia Industries for the Blind at Charlottesville and Virginia Industries for the Blind at Richmond. Each workshop has an advisory committee consisting of five workshop employees who are selected by their fellow workers. The committees advise the superintendents about workshop policies and procedures and attempt to resolve any grievances that workshop employees may have relative to working conditions, wages, and other relevant matters.

The Business Enterprises Program of our agency has the responsibility for managing the Vending Facility Program in Virginia. During recent months, a Vending Facility Operators Council has been established to advise management about the various aspects of the program. The representatives on the Council are elected by their fellow operators and they meet at least biannually and more often if necessary to provide consultation to the Business Enterprises Program manager.

The Rehabilitation Act of 1973, as amended, requires that all State Vocational Rehabilitation Agencies develop a formal program for receiving and considering the views of recipients of vocational rehabilitation services, providers of such services, and other

individuals who are interested in vocational rehabilitation services. The vocational rehabilitation services delivery component of the Virginia Commission for the Visually Handicapped has developed a Policy Development Consultation Plan that specifies the various mechanisms that will be used to solicit consumer participation in the development and implementation of vocational rehabilitation policies and procedures. Time will not permit me to discuss all the provisions of the plan but I would like to describe two of the elements which I believe have assisted us greatly in obtaining consumer involvement in our program.

1. Local forums are scheduled biannually in various locations throughout Virginia for the purpose of bringing together vocational rehabilitation staff, present clients, former clients, ophthalmologists, optometrists, and other representatives from various human resource agencies and organizations. The forums are designed to obtain consultation from these individuals and groups and to discuss problem areas that exist and possible solutions to those problems. We are extremely pleased with the results of the one forum that has already been conducted and additional forums will be scheduled during ensuing years.
2. Annually, an opinion survey is conducted of those clients who were closed in statuses 26, 28, or 30 during the previous year in an effort to learn to what extent the clients were satisfied with the vocational rehabilitation services that were provided. As a result of these surveys, we have modified some programs and changed some policies and procedures as recommended by the clients.

As you can determine, most of our efforts to solicit consumer participation in our programs are voluntary in nature, rather than mandated by state or federal law. It is the philosophy of the Virginia Commission for the Visually Handicapped that we do not have the answers to all the problems that exist in serving blind and visually handicapped individuals. We also realize that consumers do not always have the answers to those problems. However, by working together, professionals and consumers, we think that we have been able to eliminate, or at least alleviate, some of the problems that have existed in the past. We realize that "the counselor is not the client" since each client is an individual who has unique interests, aptitudes and abilities. We also realize that "the client is not the counselor" and that our professional staff have a great deal of expertise in providing services to the blind and visually handicapped population.

In summary, we have a diversified system of encouraging and facilitating consumer participation within our agency programs. We request ideas and suggestions through agency publications; we have seven different advisory committees; we have developed regularly scheduled public hearings and local forums, parents of pre-school age children sign off for prescription for training; and there is a

scientifically administered opinion survey that is conducted annually. The staff of our agency are very serious about their roles as service providers.

SOME THOUGHTS FROM A FORMER CONSUMER

by

Frank S. Penland, Director
Education Services
Virginia Commission for the Visually Handicapped

Introduction

I appreciate the opportunity to speak to this convention as a former consumer services provided by the Virginia Commission for the Visually Handicapped. My remarks are personal and reflect the needs I see in the blindness system in North America.

In 1968 I was declared legally blind by an ophthalmologist who said, "You have retinitis pigmentosa, you are legally blind, you will become totally blind, and at some point you will need to learn braille." Since I wasn't expecting such a traumatic prognosis, I drove the 14 miles home, cried all the way, and contemplated a future that had collapsed into "nothing." The ophthalmologist offered no referral or resource information, so I entered the world of blindness alone, afraid, and within only a few days, became very quiet and depressed. For me, the blindness system manned by highly skilled professionals such as yourselves did not exist.

In less than six weeks, I entered a 3 1/2 month process that could only be described as HELL! That time included an overdose of sleeping pills; an ambulance speeding to a hospital; a stay in an intensive care unit at the Medical College of Virginia; a deep psychosis; electric shock therapy; and a complete recovery to the world of work, family, and a reality that blindness can be dealt with if I was willing to adapt my life style.

Since that traumatic and nearly catastrophic period of my 28th year, I have learned to cope with failing vision, I now walk with a white cane at all times. What makes today bright? In part, the services of the Virginia Commission for the Visually Handicapped in between 1968 and 1970. My psychiatrist referred me upon my return from HELL to the Commission.

I am forever in debt to Lola, a blind switchboard operator; to Hugh, the first legally blind man I had ever met (he is an Assistant State Supervisor of Vocational Rehabilitation); to Jarrell, an extremely talented and persuasive orientation and mobility instructor; of Virginia, a very precise and perceptive blind

rehabilitation teacher, and to the staff of the Virginia State Library for the Blind. Each of these individuals and services made a significant contribution to my full rehabilitation. I cherish their services and friendship and try to use them as guides and models when I hire staff to work with my blind children. The services were both appropriate and magnificently given by those I have identified.

I am here today as a former consumer to reflect on three needs that I deem to be unmet nationally and that require each of you to consider personally and resolve. Instead of speaking to the 400-600 people assembled as a group I would prefer to make this a personal conversation with each of you. Please write down the following telephone number: 225-584-3246: ext. 3. I will explain the significance of this number at the end of this presentation. Today I offer you three suggestions. I will call them "time-bombs" since I hope that you will consider each of them carefully as you travel home by bus, plane, train, or automobile, and again at your work station. It matters little whether you are a first year employee, a retired leader in the field of blindness, an intern, an administrator, or a field services staffer. You may be the one who uses one or more of these "time bombs" as a catalyst for positive change.

Time bomb #1:

I propose that every state, local, or private agency use state, private or donated funds to purchase CCTV's, optacons, and other sophisticated devices to loan to blind clients who are not financially eligible for such devices through Vocational Rehabilitation or Title XX funds. I have no quarrel with federal financial eligibility requirements since I am reasonably certain that Congress felt a need to protect the public treasury.

On the other hand, I am equally convinced that blindness is enough to deal with, without being denied access to equipment because of financial ineligibility. I submit that each person here should return home and build a system that assures that all blind individuals have equal access to special equipment because they are blind, not because of other income level. Let's solve the problem without further delay.

Time bomb #2:

We need professionals who are sensitive to the needs of blind clients. Ask yourselves these questions: "Am I knowledgeable about the legislative and administrative concerns of my professional speciality and am I concerned about full compliance with same?" "Am I a skilled professional who knows my system well, but who knowingly tries to 'bend or nudge' that system on behalf of my clients?" "Am I sensitive to my clients as people with personal goals, objectives, fears, and needs?"

We live in a professional world of quarterly reports, 26's, IEP's, FFPC's, FFPI's, preschoolers, aged, multiplihandicapped, and other categories. Do we see our clients in these terms or in the context of their personal environments and needs? As you look at Frank Penland, you see a multiplihandicapped client. I am blind, I am middleaged, I am overweight, and I am male! But know me for who I am, not by a label. I submit that any professional in the blindness system who has lost his/her sensitivity to client needs should immediately resign and apply for a job with the Internal Revenue Service. I don't think they require sensitivity as part of their professional profile.

Time bomb #3:

The largest and most important 'time bomb' of all is we need a national toll free number for newly blinded individuals to contact us.

According to Sir John's keynote presentation, we represent the most sophisticated system of services to the blind in the world. I agree with his comment. My problem is simple, I have 35,000 brothers and sisters who are on the blink of disaster--who in the next 365 days, will be diagnosed as legally and in most cases they don't know we exist. Based on my personal experience, daily ads on television and radio would not have helped without the availability of a toll free number.

On the day before the diagnosis, I did not need you--you were thought of in terms of the Cancer Society, the Heart Fund, and all the others. I had only an academic interest in blindness. On the day of the diagnosis and the days immediately following, where were you? My world had collapsed, my life style was gone, and my future was non-existent! Where were you? You were not and are still not visible, but entrenched in your state and local, public and private agencies.

I am upset that we, as a profession, have not made ourselves as visible as McDonalds, Holliday Inns, Pizza Huts, and Sears. We have a fine service to offer, let's peel back the camouflage and pass the word to the newly blinded of North America. For each newly blinded person, these are catastrophic times. We must be as available as the police, the fire department, or the rescue squad. We must say: We are here! We can help! You have paid your taxes, come receive these services!

I will continue my personal fight until a national toll free number is a reality. In the meantime, return to your agency and constituents and campaign for a statewide or regional toll free number in place now.

Every year, 35,000 of our brothers and sisters need us under very traumatic conditions. In the next decade, 350,000 people will

seek the gates. I almost died because the gate was not visible. Please join me in sounding the alarm and spreading the word. Our time to act is now! If I have spoken too loudly for the amplification system, it's because I believe in this cause and I want to get the message back to the East Coast. In citizens band lingo--this is a 1033--emergency! Let's join together to reach out to our fellow man.

The telephone number I gave you, 225-584-3246 ext. 3, does not exist today. It stands for CALL THE BLIND on a telephone dial.

This "time bomb" needs immediate attention. God Bless You!

CONSUMER PARTICIPATION--VISION CANADA

by

Louise D. Cowan, M.S.W.
Coordinating Consultant, Social Services
The Canadian National Institute for the Blind

In 1975, in Atlanta, I was a member of a panel reporting on client input. Here, in Portland, I shall talk about consumer participation in a nationwide survey on unmet needs of blind Canadians. I shall discuss the nature of the report. I shall tell you how CNIB is implementing recommendations contained in the report.

Consumer Participation

On September 10, 1974, CNIB Management--with the approval of the National Council--its policy-making body--inaugurated the national survey on the unmet needs of blind Canadians. CNIB was successful in securing partial funding from the federal government Department of Health and Welfare. An experienced social work researcher, Professor Cyril Greenland, was engaged to design and direct the study. The director's first objective was to reach the blind people across Canada. A National Steering Committee, composed mainly of blind consumers from different walks of life, and representative of 10 provinces and the Northwest Territories, was set up--15 people in all. I was assigned to the Steering Committee, served as coordinator and chairperson, and provided the director with statistical information and other resource material.

The Committee members in turn assisted in a program to reach blind persons in their home towns and to encourage them to speak up on the unmet needs as each saw them.

The director and I then travelled from coast to coast, holding weekend consultations with blind people. We heard views of blind persons, of deaf-blind persons, and multihandicapped blind persons. Relatives and friends, CNIB volunteers and staff, outside educators, rehabilitation specialists, and personnel from government departments also took part in the consultations.

The study was not restricted to CNIB services. It was broad and included many disciplines. It examined services and programs such as community responsibility, concessions, diagnostic services, education and training, employment, mechanical and technical aids,

preschool services, prevention of blindness, preservation and restoration of sight, public education, recreation programs, research, social services, transcription services, transportation, and vocational rehabilitation.

The director and the steering committee also sought input from special groups and associations, inviting briefs and representation from The Canadian Council of the Blind--a nation-wide organization of the blind--from parents of blind children, blind parents, the elderly blind at home and in institutions, student and youth groups, the war-blinded, educators, and health and welfare agencies. Two thousand people, 80% of whom were blind, responded by telephone, letters, and informal briefs. Another 300 participated in face-to-face consultations. The research and collection of information occupied the entire year of 1975.

Nature of the Report

Under the title Vision Canada, the resulting report contains 10 chapters with more than 50 major recommendations. The recommendations are directed to governments, to universities, other major organizations, and CNIB. The report documents that in an affluent economy the blind are the poorest of the poor. The report calls for a public commitment to assist visually impaired children. It states that many handicapped children are being neglected and maltreated. Adult blind persons, even when they are able to work and are self-supporting, are discriminated against in public places, housing, and employment. The designers of cities, transportation act as if the population consists entirely of Olympic athletes with fast reflexes and 20/20 vision. The report exhorts Canadian Press, the cooperative news-gathering agency, to provide a weekly digest of news and public affairs on cassette available through the mails or public libraries. It accuses the Canadian Broadcasting Corporation of scarcely recognizing the existence of the blind and recommends special programs on prime time on radio and on television. The report urges specific legislation to protect the legal rights of dog guide users. During the course of the survey many dog guide users asserted that they had been refused admittance to transportation systems, hotels and restaurants. The foregoing are samples of comments and recommendations directed to the community and to governments.

The report is critical also of CNIB and states, "In endeavouring to care for all the needs of blind people, CNIB tends to promise more than it or any group can deliver." It claims that this CNIB approach is a disservice instead of a service, because it lets the communities "off the hook" and removes their responsibilities for blind citizens. To place the responsibilities where they belong, CNIB should extricate itself from as many direct services as possible and train personnel in government, education, and other outside organizations to provide needed programs and services. Also, CNIB should become a major

resource with respect to blindness; for research, development and training for all the helping professions--specifically for education, social welfare, public health, medicine, science, and technology. A major point emphasized throughout the survey is the need to include more blind consumers in the formation of services, since they no longer wish to be recipients only. Following the publication of Vision Canada, The Toronto Star in an editorial commented, "The fact that the Institute itself commissioned the Study suggests it is aware of deficiencies and is ready to reform itself."

Implementation

To determine the CNIB response to Vision Canada, the National Council set up an ad hoc committee, most of the members blind. For 6 months this committee studied the report and made 14 decisive recommendations to National Council. Because of the gigantic nature of this project and the almost revolutionary issues involved, implementation of recommendations will be related to priority needs and will be continuously monitored. To monitor and coordinate the implementation, the ad hoc committee has been replaced by a Service Evaluation Committee. This 8-member committee--half of whom are blind persons--is composed of members of the National Council, members of CNIB management and staff, and representatives from The Canadian Council of the Blind. The committee recognizes that priority attention is already being given to strengthening the prevention of blindness programs, the library and transcription services, employment services, and education and information services.

In conjunction with CNIB's eye service and prevention of blindness staff, the Canadian Ophthalmological Society and members of other medical and paramedical professional associations are now providing education through seminars, professional journals, and the media on the many facets of blindness prevention. Libraries across the country are now placing on their shelves large print and talking books, many of the latter produced at CNIB.

Canada Manpower is working with CNIB to open its employment services to blind job seekers, and CNIB is providing training to manpower personnel in order to teach them how to work with blind people. This summer, CNIB's employment department, with funding from the federal government Department of the Secretary of State, is engaged in a project that will produce an inventory of occupations in which blind persons are currently employed. This material will be made available to high school guidance personnel, university and college counselling services, and vocational rehabilitation services for their use with blind and seriously visually impaired students and clients.

Responding to the omnipresent cry for more and more instant communication and information, and for equality of rights, CNIB this summer--through its Public Relations and Information Services,

and with financial assistance from the Department of the Secretary of State--is investigating several areas of Canadian laws as they affect the lives of blind persons. The project being carried out by law students, under the direction of a blind law student, is focussing upon such matters as taxation, dog guide users rights, education rights, housing rights, building standards, and other concerns. The law students will recognize that already 3 provinces in their Human Rights Legislation have enacted right of access to public places for dog guide users. Three other provinces have similar enactments in draft.

In the area of recreation, CNIB has joined with 3 other national organizations in promoting integration of handicapped citizens into community programs. Also, other bodies in other ways are responding to the report and to CNIB's advocacy efforts.

The Service Evaluation Committee is emphatic that the implementation of the ad hoc committee's recommendations must involve the blind consumer.

Analysis of the Study

No matter how diverse were the target groups of the Unmet Needs Study, the recommendations always had the same objective--the blind person's right to human dignity, to maximum independence, and to social acceptance. The Study is important for three major reasons: It is, primarily, (1) an analysis of the status of blind persons today and, (2) an assessment of prevention of blindness in Canada. It is also (3) a reproach to the private sector and to governments at all levels for the relative neglect of visually handicapped Canadians in our society. The greatest significance of the report, however, is its value for present and future development. It is a blueprint for the building of new programming towards the integration of blind persons into the community and the removal of the poorest of them from the poverty level.

In my opinion Vision Canada is a turning point in the history of CNIB. In its first 60 years CNIB of necessity served as custodian, parent-provider, father-confessor, teacher, and employer. The paternalistic role is no longer acceptable. Blind people today demand access with dignity to all public programs. Apart from responsibility for adjustment to blindness training, CNIB must serve as a catalyst rather than the provider of services, making programs in the community accessible to blind citizens.

The goal is essential services, needed training, greatly expanded social, medical, and technological research that will ensure to blind people the opportunity for fulfilled living.

THE TEACHING FUNCTION

Two sets of articles appear in this section, the first consisting of two in the subcategory, "The Best of the Past." These two articles were selected by C. Warren Bledsoe, the first being a verbatim reproduction of a letter written by Helen Keller that appeared originally in American Annals of the Deaf and later reprinted in Outlook for the Blind. The second, about the education of Laura Bridgman, has been reduced in length. The second set of two articles deal with current issues related to the teaching of the visually and multisensory impaired.

THE BEST OF THE PAST

by

C. Warren Bledsoe

Introduction

This "Best of the Past" is the eleventh in a series designed to preserve landmark literature of blindiana. In this issue Helen Keller's letter on the olfactory sense hardly needs an introduction, so well known is she to the public. Her youthful, pristine account of how she used her sense of smell is quintessential. It says everything for itself that needs to be said to nominate it as a classic in the field of blindiana literature. A fitting companion piece to it is John Bernard Mannix's short biography of Laura Bridgman. This may require a little more explanation.

Few people realize the extent to which Helen Keller's education was based on Laura Bridgman's, or that Luara Bridgman preceded Helen Keller by half a century as a widely publicized deaf-blind person who had become a fully communicating member of the human family through use of the manual alphabet. She never turned into a world traveller as did Helen Keller. In fact, she was never altogether weaned from the Perkins School. But, there is no doubt she was a very complete person with the quaint, piquant charm of a New England spinster. The Perkins School's first director, the multigifted Dr. Samuel Gridley Howe, was her first teacher. In her diary she called him "the noblest visitor," and as his star pupil she became a kind of honorary member of his family.

Howe's painstaking record of the methods that were used in educating her are the cornerstone of educational literature on the deaf-blind. It was Howe's successor, Michael Anagnos, to whom the Keller family turned in searching out a teacher for their daughter. Anne Sullivan, whom Anagnos selected for this challenging assignment, brought to it not merely herself, but the rich experience of Perkins with Laura Bridgman. Under Anagnos's supervision Anne Sullivan carefully studied Howe's notes on Laura Bridgman before embarking on the venture that the public was one day to see reenacted in "The Miracle Worker." Anne Sullivan improved on certain of Howe's methods. For instance, she did not teach each word separately by definition, but by constant repetition associated the word with the idea or object it represented. And, Anne Sullivan made the great breakthrough of teaching Helen Keller to read lips and to speak, which Howe did not accomplish with Laura Bridgman.

Nevertheless, Howe and Laura Bridgman had cleared the underbrush of incredulity in the path of the deaf-blind. Their experiences deserve to be studied, if for nothing else for the charm of their humanity. The most important key by which the "noblest visitor" opened the door of the world to Laura Bridgman was devoted, personal attention. This is a teaching method that should never go out of fashion.

Helen Keller paid it a superb tribute when she said, "What I am my country has made me. She has fostered the spirit which made my education possible. Neither Greece nor Rome, not all China, nor Great Britain nor Germany has surrounded a deaf-blind child with the devotion and skill and resources which have been mine in America."

THE VALUE OF THE SENSE OF SMELL TO THE BLIND-DEAF¹

Wrentham, Mass., April 9, 1910.

Dear Mr. Wade:

I am glad that you appreciate so fully the value of the sense of smell. It indeed fills a very important place in my life. It is one of the precious links between the world of my kind and my world. By its guidance I enter with active interest into much that goes on about me which is beyond the ken of my touch. It would be a hard situation for me if, in addition to an all-encasing silence and a colorless blank, I perceived no odors. But usually there is within my reach a large variety of odors, characteristic and distinct,

¹This letter was written after reading Mr. Wade's article on "The Senses of the Blind-Deaf," published in the last November number of the Annals, pages 451-455. Reprinted from American Annals of the Deaf, May, 1910, pp. 282-284.

which I observe, associate, and utilize. They tell me a good deal about people, the occupation they are engaged in, their garments, their habits, and even the state of their health, about the condition of objects I handle, and the places I visit. It is a mistake to think that for the deaf-blind person who uses his sense of smell to good purpose all places and persons are alike.

When I am riding, I feel fewer vibrations, and I then depend largely on smell. I find many differences of odor between the city and the village, the street and the open road. The odor of fresh bread or fried doughnuts, the concentrated scents of flowers, the smell of fish, vegetables, and fruit make known to me that we are passing a bakery, a flower shop, or a market. Suppose that we take a long ride through Boston on a hot summer day. All doors and windows are open, and I am thrilled, pleased, or saddened by the exhalations of life which throng the air. First I may note the heavy air peculiar to drygoods stores and the atmosphere of hotels and restaurants. Then come the refreshing, resinous billow of odors from the Public Gardens, and the cool, cavernous smell of cement and brick from the subway. Perhaps we approach a poorer part of the city, and I recognize the air of poverty, dirt, and neglect which hangs over it. The heat brings out many odors from the garments of the persons who pass and repass us. In summer the streets are more animated and diversified to the olfactive sense than in winter. As we leave the crowded streets and approach the suburbs, I notice the increasing sweeps of green; and hayfields and woods announce that we are speeding farther into the country. All these odors, gathered together, furnish me with an aggregate of experience, often delightful and charming, at times unpleasant, but always enough to keep me interested and stimulated.

In the country there are, if not more odors than in the city, more in bulk, especially those of a quality that add to the richness and joy of physical life. There is the dusty road thronged, alas! with automobiles. Now and again an electric car goes whizzing by, and then a team passes leaving behind a scent of grain, hay, or manure. Here the lilacs and apple blossoms send forth whiffs that pursue me like happy dreams. There a briny smell floats to me from the marshes. I am aware by touch and smell of spaces covered with grass, moss, or the fading, rustling leaves of autumn. The pine, dripping pitch in April, is more pungent, more acrid than in the dry summer months. I have just been down in the woods where the lower branches of the trees are being trimmed, and the open wounds seemed to emit resinous gusts that filled the whole grove! Without inquiring I know when we pass a farmyard or the big duck farm, a mile or two from our house, or when we go by a pile of sawed lumber or come to the village shops. A feeling of regret seizes me as I catch an odor of ashes from places where forest fires have swept through the beautiful woods. After all the mud and raw cold of the winter, succeeded by a long period of dry weather, I am rejoiced by the smell of sweet, warm rain and of new grass and running sap. To the advantages I possess of touch must be added those of smell, if the fullness of my life is to be understood.

Smell also prevents me from losing the dear sense of human activity and fellowship. Those I love come and go, and by their odor I know they are near. The odors which cling to their clothes tell me that they have been in the garden, the woods, or the attic. From other exhalations I find out that a painter or a carpenter is busy about the house. A combination of scents from wraps, perfumes, and powder that we do not use here warns me that a caller has arrived. Through the open window, as I write, is blown an earthy smell which indicates that the garden is being plowed. There seems to be no end to the odors from which I gain knowledge of the details of every-day life. I need not weary others, or be wearied myself, with incessant effort to describe the outer world.

I do not see why a deaf-blind or a blind person should be debarred from using the sense of smell, or any other faculty that may broaden his experience, always limited at best, and increase his enjoyment of life. I am surprised that smell or any other sense should be scorned just because sometimes it takes cognizance of disagreeable objects. It seems as reasonable to slight the eye because it brings us visions of trivial, squalid, or ugly things.

Affectionately your friend,

Helen Keller

LAURA BRIDGMAN AND HER TEACHERS

by

John Bernard Mannix

Laura Dewey Bridgman was born on 21st December, 1829, at Hanover, New Hampshire. The third daughter of Daniel Bridgman, a farmer, and his wife Harmony, Laura came of sturdy New England stock, English in origin. She was, however, a puny and rickety child, and until she was half-way through her second year, suffered from convulsions. For the next few months she enjoyed fairly good health. She had learned to speak a few words, and was then active and intelligent beyond her years. Shortly after her second birthday Laura and her two sisters contracted scarlet fever. Laura suffered terribly. The organs of both sight and hearing were destroyed, and the senses of smell and taste were blunted and impaired. Her eyes caused her great pain, and she had to be kept in a darkened room for five months. It was twelve months before she could walk without help, and two

years before she had recovered sufficiently to sit up all day. At the age of five years she had regained her bodily strength. Her mental powers were, as it transpired, unimpaired, but her lost senses left her mentality imprisoned and in chains, so to speak. Not only had she lost sight, hearing, and, to all intents and purposes, smell, but her sense of taste was so damaged that she could hardly distinguish between different articles of food. She had, too, having lost the sense of hearing, lost also the power of speech.

Laura's only means of communication with her relatives and the outside world was by the sense of touch. She made full use of her one remaining sense, and with childish curiosity felt at everything within her reach. She followed her mother about while she was performing her many household duties, and felt her every motion with her little hands. The instinct of imitation soon developed, and little Laura learned to set the table, and even to sew and knit. The only way of communicating with her was by the simplest of signs. A push meant "Go"; a pull "Come"; a pat on the head expressed approval; on the back, disapproval; raising the hand to the lips as if tipping a cup--drink, and so on.

In so far as her consciousness had developed, and taking into account the fact that to her even her relatives were merely animate and nameless bodies, warm and friendly to the sense of touch, Laura was of an affectionate disposition. To one friend of her childhood she always clung. This was a Mr. Asa Tenney, familiarly known as "Uncle Asa," an eccentric but warm-hearted old bachelor. Hand in hand the old man and the little silent child used to wander through the fields and woods round Hanover, happy and contented in each other's company. Uncle Asa seemed to divine and anticipate her wants, and was always delighted to minister to them. That he succeeded in endearing himself to Laura is proved by her lifelong regard for him.

As Laura grew older her will naturally developed, and she grew more difficult to control. The kindly hand that was to guide her through life came none too soon.

Dr. Howe, with characteristic thoroughness, had turned all his attention to the study of the best and most efficient methods of teaching the blind. The question had frequently arisen as to whether a deaf-blind mute could be taught an arbitrary, as apart from a sign, language. He had devoted considerable thought to the matter, and when he heard of little Laura Bridgman--although he was quite aware that in the case of Julia Brace, the blind-mute of Hartford, Conn., and in every other case authentically recorded, the attempt had failed--he at once made up his mind to assist the unfortunate child, to make one more attempt to reach an imprisoned human soul, and to place it in communication with its fellow-beings and the world in general.

Dr. Howe went to Hanover to see Laura, travelling part of the way with the poet Longfellow. He wrote afterwards:

"I found her with a well-formed figure; a strongly marked nervous-sanguine temperament; a large and beautifully shaped head, and the whole system in healthy action."

He induced her parents to allow her to go to Boston, and accordingly little Laura was taken to the Perkins Institution in October, 1837, she being then just under eight years of age.

Then came the question of the plan of teaching. There were two methods by which Laura could have been taught to express her thoughts. The first would have been to extend and systematise the natural signs which she already used, and to give her as far as possible a fresh sign for every individual object with which she became familiar. This course would have been comparatively easy, but of only limited utility. The other plan, and the one which it was decided to adopt, was to teach her the letters of the arbitrary language which we ourselves use, and by means of which she would, it was hoped, be able to express her wishes and ideas as they developed.

Allowing Laura a week or two to become accustomed to her new surroundings, Dr. Howe, assisted by Miss Drew, one of the teachers at the institution, proceeded to give the little blind and deaf girl her first lesson. Dr. Howe thus describes their early efforts:

"The first experiments were made by taking articles in common use, such as knives, forks, spoons, keys, etc., and pasting upon them labels printed in raised letters. These she felt very carefully. . . .

"Then small detached labels, with the same words printed upon them, were put into her hands; and she soon observed that they were similar to the ones pasted on the articles. She showed her perception of this similarity by laying the label 'k-e-y' upon the key, and the label 's-p-o-o-n' upon the spoon.

"The same process was repeated with all the articles she could handle; and she very easily learned to place proper labels upon them. It was evident, however, that the only intellectual exercise was that of imitation and memory. . . . She repeated the process with only the motive of love of approbation, but apparently without the intellectual perception of any relation between the things.

"After awhile, instead of labels, the individual letters were given to her on detached bits of paper; they were arranged side by side so as to spell 'b-o-o-k,' 'k-e-y,' etc.; then they were mixed up in a heap, and a sign was made to her to arrange them herself so as to express the words book, key, etc., and she did so.

"Hitherto the process had been mechanical. . . . The poor child had sat in mute amazement, and patiently imitated everything her teacher did; but now the truth began to flash upon her; her intellect began to work; she perceived that here was a way by which she could herself make up a sign of anything that was in her own mind, and show it to another mind; and at once her countenance lighted up with

a human expression; it was no longer a dog or parrot; it was an immortal spirit eagerly seizing upon a new link of union with other spirits!"

Once having got the germ-idea implanted in her intelligence, Laura's progress was certain, if neither rapid nor easy. In succeeding lessons a logical sequence was followed. The name-label would be given her, and she would search for the article, or the process being reversed, and the article pointed out, she would find the proper label. Then, having mastered the significance of certain words as a whole, a case of metal type was put before her, and she soon learned to compose with the type-letters the words with which she was already familiar. The case of type contained four sets of the alphabet. One set was kept arranged in its proper order, while she used the others. In less than three days she had mastered the proper order, and, incidentally, the alphabet. So that we see that in her case the usual method was reversed. She commenced with word-ideas, and by a process of analysis picked out the different letters of the alphabet.

Nearly two months were allowed to elapse before the next step was taken in Laura Bridgman's education. This was to teach her the manual alphabet and its uses. Her teacher, Miss Drew, learned it from a deaf mute in one afternoon, and the next day set about imparting it to her pupil. She showed Laura the position of the fingers which represented each of the types she had been using. Laura soon acquired the manual alphabet, and was at once eager to learn the name of every object with which she came into contact. Her teacher would spell out the name of the object on her fingers, and the little girl's face would light up with pleasure when she grasped a new idea.

"She placed her right hand over mine," wrote Miss Drew, "so she could feel every change of position, and with the greatest anxiety watched for each letter; then she attempted to spell it herself; and as she mastered the word her anxiety changed to delight. . . . She very soon perceived that spelling the words in this way was much more rapid, and attended with much less difficulty than the old method with types, and immediately applied it practically. I shall never forget the first meal taken after she appreciated the use of the finger alphabet. Every article that she touched must have a name. . . . She kept me busy spelling the new words."

After nouns for names came verbs for actions. The very first were "shut" and "open"; "shut door" and "open door," accompanying the words by the actions. By degrees she was taught most of the verbs in constant use, and then the adjectives. She learned, too, the names of her teachers and companions. Until then each one had been but a nameless and soundless but friendly being, tangible to the touch. Now she could converse with them, could ask questions, and exchange ideas.

In a year or so it was thought necessary to teach Laura to write. At first she was puzzled, but faithfully imitated and repeated

every motion, moving her pencil repeatedly so as to form the same letters over and over again. The process was a slow one, and Laura did not learn to write as well or as quickly as some of her blind companions. But as soon as she came to understand that this was another method of conveying her thoughts to others, she was delighted, and applied herself to the task of forming letters and words with enthusiasm. In a few months she was able to write a letter to her mother--a childish and imperfect one it is true, but still a remarkable accomplishment for a child in her position.

No regular record of Laura Bridgman's lessons was kept until June, 1840, but at the close of the year 1838, when she had been some sixteen months under training, Dr. Howe published the first of his remarkable annual reports, which afford such a graphic record of the physical, mental, and moral development of his famous pupil. In this first report he wrote:

"It has been ascertained beyond the possibility of doubt that she cannot see a ray of light, cannot hear the least sound, and never exercises her sense of smell if she has any. Thus her mind dwells in darkness and stillness, as profound as that of a closed tomb at midnight. Of beautiful sights and sweet sounds and pleasant odours she has no conception; nevertheless, she seems as happy and playful as a bird or a lamb. . . . When left alone she seems very happy if she has her knitting or sewing, and will busy herself for hours; if she has no occupation, she evidently amuses herself by imaginary dialogues, or recalling past impressions."

Some six months after Laura had left home, her mother came to see her. The little girl did not at first know her visitor, but gradually recognised articles of apparel that her mother wore. Then suddenly it dawned upon her that this was indeed her mother, and as she nestled in her arms the scene was a deeply touching one, rendered still more so when the time for parting came.

Laura paid her first visit to her home in Hanover in 1839, accompanied by Miss Drew. Her father met them, and she at once recognised him. She showed Miss Drew all over the house, and inquired the names of things she had not met with in Boston. Laura was anxious, too, to talk to her mother, and at once set about teaching her the manual alphabet.

A year later Dr. Howe records his gratification with Laura's intellectual improvement, and the progress she has made in the expression of her ideas. He goes on to describe the ingenious methods adopted to teach her to grasp the meaning of positive qualities such as "hardness" or "softness." She was as yet unable to realise any general expression of quality in the abstract, that is, apart from any particular object. She found the expression of relative position much easier to understand--e.g., "on" or "into"; and those terms expressive of practical action such as sewing, or walking, or running, perhaps easiest of all. Her acquaintance with the construction of sentences was necessarily imperfect. She, naturally enough, put the

leading idea first. Thus, in asking for bread or water she would say, "Bread, give Laura;" or, "Water, drink Laura."

The method by which Laura Bridgman acquired language resembled in some degree what must have been the successive stages of the evolution of language amongst primitive peoples. But language not only grows richer and more flexible with use, it is at once a medium of expression, and a direct incentive to the evolution of ideas. In Laura's case the part that language played in her intellectual development was most marked. At first, to her, words were purely objective, and were applied arbitrarily to one particular object. It was quite a long time before she could grasp the idea of words expressing the idea of a group or class of articles, such as books or pictures, substantively the same, but individually different.

Advantage was taken of the opportunity, when teaching Laura the meaning of such words as "forget" and "remember," to test her memory of her infantile days, before the time of the illness by which she lost all her senses, but she could remember little or nothing.

Dr. Howe conducted some experiments with a view to ascertaining the acuteness of Laura's partially remaining senses. As regarded that of taste she could at once distinguish acidity and acid flavours, but not bitterness.

The one sense that remained unimpaired--touch--was highly developed and extremely sensitive. She could fix the identity of different people with remarkable readiness. There were forty inmates in the female wing of the institution. Laura knew them all, and when walking along the corridors, if the vibration told her someone was approaching her, she stretched out her little arms, and the touch of a hand, or even part of the dress, seemed to suffice to tell her at once who the other person was.

Natural curiosity and the desire for knowledge, when once aroused, kept Laura's fingers, which to her took the place of eyes and ears, continually in motion. Dr. Howe compared them to the incessantly moving antennae or feelers of some little insect. When walking with a companion, she not only recognised everything she passed within touching distance, but by continually feeling at her friend's hands, found out what he or she was doing. She had a wonderfully accurate knowledge of the institution, its furniture and its arrangements, and quickly discovered anything new or strange.

Later, she came to know when anyone touched the keys of a piano in the same room with her. She could tell whether Dr. Howe had an old or a new coat on, even if both were of the same texture. Her mentor attributed this to what he called the sense of "muscular resistance." He remarked, too, on her sense of direction, which enabled her to walk with unfaltering footsteps right across a room from point to point, avoiding every obstacle in her course.

Commenting on the development of the moral side of Laura's nature, Dr. Howe remarked on the correctness of her deportment, and neatness, love of order and general propriety. He mentioned, too, the difference of her behaviour with persons of different sex. With little girl companions and grown-up women friends she was most affectionate and demonstrative, but although she was fond of some of her male acquaintances, she never, even when only seven years of age, permitted any approach to the most innocent familiarity on the part of the other sex.

Laura was, too, very conscientious, and early acquired a wholesome respect for the property of others. But up to her eleventh year, at all events, according to her famous instructor, "No religious feeling, properly so called, has developed itself; nor is it yet time perhaps to look for it." He pointed out, however, that she had shown a disposition to respect those who have power and knowledge, and to love those who have goodness. Accordingly, he went on to express the hope that, when the time was ripe, he would be able to undertake the religious part of her education which he had taken upon himself. At this time Laura lived with Dr. Howe and his sister in the apartments reserved for the Director.

Little Miss Bridgman soon commenced to think for herself. Her new teacher, Miss Swift (afterwards her biographer, Mrs. Lamson), who began to give her lessons in June, 1841, told Laura one day that she had only three senses. After considering the matter for a while she spelled out on her fingers: "I have four!"

"Four what?" asked her teacher.

"Four senses," replied the little girl; "think, and nose, and mouth, and fingers. I have four senses," she insisted, and seemed highly pleased at the discovery.

About this time it was noticed that Laura began to make a peculiar sound when she met anyone she knew, and that the sound was slightly different for each person, for one a chuckle, for another a nasal sound, for another a guttural, and so on. Each one she called that person's "noise," and it was evidently intended as a sign or token for that particular individual.

Laura's curiosity, as has been suggested, was insatiable, and her questions were frequently very pertinent. Her teacher having shown her a pincushion made in the shape of a fish, Laura said, "You must teach me about fish. Why has it not legs?" Again, being told about flies, she asked, "Why do flies fly with wings? Why do they not walk on the floor?" She became quite interested in animals, and on one memorable occasion, having had a ride on horseback, she wanted to know, "Why do not horses and flies go to bed? Why do horses have iron shoes? I hear horse walk when he kicks off flies, because they are hard." She was referring to the stamping of the horses in the stables.

Accompanied by Miss Drew, Laura paid another visit to her parents in October, 1841. Dr. Howe met her in Concord, and the little blind and deaf girl gave a display of her capabilities in the State House before an influential assembly. Laura was already becoming famous, but the knowledge was carefully kept from her, and she was quite unspoiled. She was taken to visit Julia Brace, her fellow-sufferer, at Hartford Asylum, and also Mrs. L. H. Sigourney, the authoress, who wrote a poem on the occasion. At the close of this round of visits, Laura had to part with her first teacher, Miss Drew, to whom she owed so much, and who was leaving the institution to be married.

The year 1842 was memorable to Laura Bridgman, for she was visited by no less a person than Charles Dickens. Miss Swift made the following entry in her journal:

"29th January.--To-day Laura had the honour of a call from Charles Dickens. His great interest in her caused him to remain for several hours. She was animated in conversation, and I think he received a very correct impression of her."

The great English novelist devotes several pages of his "American Notes" to his impressions of the Perkins Institution and its inmates. He wrote:

"Like most other public institutions in America of the same class, it stands a mile or two without the town, in a cheerful, healthy spot; and is an airy, spacious, handsome edifice. It is built upon a height commanding the harbour."

Dickens goes on to describe the personnel and routine, the good order, cleanliness, and comfort of the institution, the camaraderie that prevailed among the afflicted inmates, and yet, behind it all, he was alive to the pathos of their common deprivation. With those keen, observant eyes of his he glimpsed the fleeting expressions of the blind, who, unseeing, dream themselves unseen, and do not dissemble. Most vivid of all, however, was evidently the impression made by the story of the shadowed, silent life of Laura Bridgman. Here are his own words:

"I sat down in another room before a girl, blind, deaf, and dumb; destitute of smell, and nearly so of taste; before a fair, young creature with every human faculty and hope and power of goodness and affection, enclosed within her delicate frame, and but one outward sense--the sense of touch. There she was, before me; built up, as it were, in a marble cell, impervious to any ray of light, or particle of sound; with her poor white hand peeping through a chink in the wall, beckoning to some good man for help, that an immortal soul might be awakened.

"Long before I looked upon her, the help had come. Her face was radiant with intelligence and pleasure. Her hair, braided by her own hands, was bound about a head whose intellectual capacity

and development were beautifully expressed in its graceful outline, and its broad, open brow; her dress, arranged by herself, was a pattern of neatness and simplicity; the work she had knitted lay beside her; her writing-book was on the desk she leaned upon. From the mournful ruin of such bereavement there had slowly risen up this gentle, tender, guileless, grateful-hearted being.

"Like other inmates of that house, she had a green ribbon bound round her eyelids. A doll she had dressed lay near upon the ground. I took it up, and saw that she had made a green fillet, such as she wore herself, and fastened it about its mimic eyes."

Such is the pathetic pen picture which the famous novelist puts before us, and he goes on to narrate in his own inimitable fashion the moving story of her life.

The death of one of the blind boys in the Perkins Institution grieved and upset Laura very much, for she appears to have had an innate and instinctive fear of death. Dr. Howe seized this opportunity of instilling into Laura's mind some idea of God and of the immortality of the soul; but he was perplexed at the very outset by the unconsciously logical and extremely direct questions of his pupil, whose literal mind confused things spiritual with things material.

It seemed as if the darkness and silence of the physical world, as she knew it, influenced her mentality, and that she was afraid to move forward otherwise than step by step and in a straight line, never accepting a new idea until she had fitted it in with her previous conceptions, lest perchance she might go astray in this strange, intangible, bewildering world of thought. Or, perhaps, it was that Laura's imagination, her power of projecting mental images, developed more slowly than her other mental faculties. This was the opinion of some of her teachers, and her lack of imaginative power was held to have caused her many difficulties in the course of her studies.

However this may have been, Dr. Howe did not find the task of beginning Laura's religious education a simple matter. She wanted to know what the soul was, why it left the body at death, and where it went to? Also, if animals had souls? and if not, why not? Her instructor tried to explain her spiritual existence as apart from her physical life, but this seemed to trouble Laura very much, and she said, "I do not wish to die." So Dr. Howe thought it best to change the subject.

In his report for the year 1842, Laura being then thirteen years of age, Dr. Howe set out his reasons for not proceeding with his pupil's religious education as quickly as some kind friends would seem to have wished. He wrote:

"I am aware of the high responsibility of the charge of a soul, and the mother who bore her can hardly feel a deeper interest in Laura's welfare than I do. . . . It is not to be doubted that

she could be taught any particular dogma or creed, and be made to give as edifying answers as are recorded of many other wonderful children to questions on spiritual subjects. . . . Unaided by any precedent for this case, one can look only to the book of Nature; and that seems to teach that we should prepare the soul for loving and worshipping God, by developing its powers, and making it acquainted with His wonderful and benevolent works, before we lay down rules of blind obedience."

The system which Dr. Howe followed in directing the education of Laura Bridgman was, at least, characterised by a sane consistency. He did not intend to permit Laura, while under his charge, to be made into a freak or show child. He spared no pains to ensure that her faculties should be allowed to develop on natural lines. Nor did he allow her intellect to be developed at the expense of her nervous and physical system. He was a firm believer in the motto of mens sana in corpore sano. Some physicians who had seen Laura were afraid that her restless activity of mind might affect her health. But Dr. Howe saw to it that the physical health and well-being of his pupil was safeguarded by calisthenic exercises and long country walks. He thought, too, that as Laura's emotions, although characteristically intense, were almost entirely of a pleasant nature, no harm would accrue. She was naturally of a bright and joyous disposition, but she was at times extremely nervous, and was encouraged to take exercise for its steadying and tonic effect on her nerves.

For some time it had been felt that a careful study of the intellectual development of Laura Bridgman would be of considerable metaphysical and scientific value, and for that reason, that a careful record should be kept of her mental progress and the course of her studies. It was arranged, therefore, that Miss Swift should devote her whole attention to Laura. The desultory manner of teaching hitherto followed gave place to a more systematic curriculum. Laura was quite pleased with the new arrangements, and took up her studies--that of geography, which was new to her, in particular--with zest and avidity.

Miss Swift's method of reading to and teaching her pupil may be briefly described. Seated at Laura's left side, preferably on a couch or sofa, the teacher spelled with her right hand (using the manual alphabet) the letters of each word, with the exception of "and," which of course has its own sign. Laura's right hand would move lightly over Miss Swift's fingers, so as not to impede their motion, and spell, or rather read, the words. She did not appear to apprehend each letter separately any more than we do in sight-reading. Laura's teachers generally found it necessary to inculcate concentration by pausing occasionally, and asking her to repeat what she had been taught, in order to make sure that she had grasped the subject thoroughly. If this were omitted, the lesson often had to be repeated. She was not allowed to leave the study of a subject until she had mastered it. This discipline of thoroughness and perseverance enabled her, with her own unusual intelligence, to

make remarkable progress. Her advancement was all the more praiseworthy, because, destitute of all the aids which sight and hearing give to the intellect and the imagination, winging the mind through the world of knowledge, this poor girl had to grope her way slowly along, alone in a still and sombre world.

Miss Swift, at the Principal's suggestion, tried some experiments in teaching her pupil to speak words vocally. She had, as we know, been in the habit of making peculiar vocal sounds. Some of them happened to resemble the words "ship," "pie," "doctor," and her teacher got Laura to repeat them. She did so, and was quite pleased with her own powers. After much labour she learned to say "pa," and "ma," and "baby."

One day she said, "My mother was wrong to make me deaf." Her teacher told her it was sickness made her so. Laura seemed satisfied, but after reflection she said, "I am very sad that I cannot hear and speak and see." Still, like the innocent child she was, she soon forgot her troubles, and the very next moment she was laughing heartily.

Dr. Howe's marriage to Miss Julia Ward took place in 1843, and Laura manifested great interest in the event. She had, however, some misgivings as to whether she would lose any share of the doctor's affections. Before Dr. Howe and his bride left for their honeymoon in Europe, Laura was taken to visit the steamship in which they were to sail. She examined the saloon and the tables, and visited the state-rooms and cabins. Lastly, she walked the whole length of the ship to get an idea of its size. Often during the doctor and his wife's absence in Europe, Laura thought and spoke of her benefactor, and was very sad and thoughtful. She evinced much interest in the birth of his daughter Juliana in 1844, and welcomed Dr. Howe and his wife and child most cordially on their return.

Pursuing his intention of inculcating into Laura's mind the idea of the Deity and His perfect goodness, Dr. Howe found that his pupil could not easily form any idea of goodness or virtue in the abstract. She invariably resorted to the concrete, and the only standard of comparison she could find was the imperfect one of humanity--her own friends and acquaintances. It was this tendency which dictated such questions as, "Why is God never unkind or wrong?"

Dr. Howe was grievously disappointed and discouraged. He attributed the marring of his scheme or plan of religious education for Laura to what he called "the well-meant officiousness of others," in directing her thoughts to things she did not understand before the proper time.

It was soon after this that Miss Swift left the Perkins Institution, and Laura was without any regular instructor from May until August, 1845. Then another system was adopted, and Miss Sarah Wight took complete charge of her education. Laura was constantly

in her company, and did not meet the other blind children, with the exception of two or three girls (chosen by Dr. Howe) who came to her room to play or chat.

Of Laura's powers of observation Dr. Howe wrote: "She . . . ascertains the state of mind of those about her by reading parts of the natural language of the emotions, which we never observe, but which are as sure guides to her as the expression of the countenance is to us. . . . Laura not only observes the tones of the finger language, she finds meaning in every posture of the body and in every movement of limb; in the various play of the muscles she observes the gentle pressure of affection, the winning force of persuasion, the firm motion of command, the quick jerk of impatience, the sudden spasm of temper, and many other variations which she interprets swiftly and correctly." As she grew older she exhibited a remarkably shrewd and sound judgment of character. She could detect and was repelled by mental weakness in others, but was attracted by gentle, timid natures, which she discovered at once. She knew how different people laughed, and often spoke of the sweet smile of one or another of her acquaintances. On one occasion she met a friend's husband for the first time. He was a worthy and estimable man, but reserved and distant in manner. He simply shook hands with Laura. She remarked afterwards: "Has he many friends? Is he greatly beloved in his own family? Is he severe?"

Miss Wight had been deputed to undertake the continuation of Laura's religious education, but after a time Dr. Howe took it back into his own hands. Laura's character and moral nature had developed and improved during these years, but she still retained her penchant for asking the old and unanswerable questions. "Why did God make us to be sick and suffer pain if He loved us?" she asked one day; and at another time: "How did God tell the first man about Himself?"

Early in the year 1847 the dear old friend of Laura's childhood, "Uncle Asa" Tenney, passed away. Laura was deeply moved, and her efforts to put on mourning for him, her inquiries about his last hours, and her wish to visit his grave, all proved how keenly she felt his loss. It turned her thoughts to the subject of death, as it might affect herself. Later in the year she was taken to Hanover to visit her parents, and was all eagerness to hear the last tidings of Uncle Asa.

Soon afterwards a little girl, totally deaf and partially blind, came to the institution, and as a good deal of her instruction was given by means of the manual alphabet, it was thought that Laura might assist. Accordingly, at the beginning of the year 1848, Laura was allowed to teach the little girl for an hour each day. That she took the task seriously may be seen from the reports she herself drew up:

"19th January--I instructed Lizzie a lesson from arithmetic with much pleasure. It seemed very funny and queer that I could teach a pupil so successfully."

Laura had long kept a journal with praiseworthy industry and regularity, and--a more uncommon quality this--sincerity. She set down her faults with no attempt at extenuation, and also her contrition for having done wrong.

Our little blind heroine was never indolent or apathetic; she simply bubbled over with energy. When she went to a friend's house to spend the day, or even a few hours, she would ask her hostess if she could do anything to help her. If there was a baby in the household, she always begged to be allowed to nurse and fondle the child, which she did with the most natural air in the world.

Laura took a real interest in the public questions of the hour. The year 1849 was memorable as that of the terrible famine in Ireland. Large sums of money were raised in America, and Laura was desirous of contributing her mite. She accordingly finished a piece of beautiful embroidery, which was sold, and with the proceeds a barrel of flour was sent across the Atlantic.

In the same year (1849) Dr. Howe writes of Laura at length for the last time. The usual yearly account of the progress of her education had been discontinued as unnecessary, there being no material changes to chronicle. He describes his protégée as being cheerful and even gay at times. He goes on, however, to write of more weighty matters--her religious and moral instruction, to wit:

"She has not been indoctrinated into any particular form of religious belief. Faith she has in God, aye! and love, too--that love which casteth out fear. Her veneration, which showed itself spontaneously, has been so directed upward to the Creator and Governor of all things, that she lives in consciousness of His protecting presence and loving care. . . . She often says with a joyful and loving look, "Our Father gives us all these things."

By this time Laura Bridgman's fame, as the first blind, deaf mute to be successfully educated, had spread practically throughout the civilised world. Dr. Howe voiced the general opinion in 1850 when he wrote:

"Her progress has been a curious and an interesting spectacle. She has come into human society with a sort of triumphal march; her course has been a perpetual ovation. Thousands have been watching her with eager eyes, and applauding each successful step, while she, all unconscious of their gaze, holding on to the slender thread and feeling her way along, has advanced with faith and courage towards those who awaited her with trembling hope."

The summer holiday of 1850 was spent by Laura and Miss Wight at Hanover. Immediately afterwards Miss Wight resigned her position, on the occasion of her marriage to Mr. Bond, a missionary. During their engagement Mr. Bond used of course to visit Miss Wight. Laura Bridgman was often present, and Mr. Bond was very kind to her. Laura

began to fancy that the young missionary came to see her. The incident cannot be better narrated than in the words of Dr. Howe's daughters in their admirable volume on Laura Bridgman, a tribute to pupil and teacher alike:

"This child, whose life was guarded from all evil, was not spared the pain of hopeless love and jealousy. The secret of that lonely heart was at last discovered by her more than sister. It seemed best that she should be made to understand that in this thing, too, she was not as others are, that she could never hope to fill the high office of wife and mother. When this was explained to her gently and kindly, her whole face changed, and her trembling fingers spelt out the words, 'Am I not pretty?'

"There is nothing more striking in her whole history than this simple incident. Much of human growth is by pain, and while the thought of the hopeless love that tortured her is infinitely pitiful, one feels that without it she could never have attained the full stature of womanhood."

Laura was really sorry to lose Miss Wight, whom she spoke of as "my best teacher." The finishing of her education was, for a time, entrusted to Miss Paddock. This lady and Miss Wight were intimate friends, and before the latter left, they spent a good deal of their time together. Laura was often present, usually busily engaged in knitting purses or making lace edging. Frequently, to her teachers' amazement, she would lay down her work and begin to talk of the person or subject of which they had been speaking. This was the more surprising when it is considered that no clue could have been given to her by word, or act, or sound, and there could be no explanation but that of thought transference. Consequently, the two friends decided not to speak of anything before Laura which they did not wish her to know.

It was not very long before Laura went home to her parents at Hanover. Dr. Howe learned, to his displeasure, that some of her relatives proposed to take her about the country to give exhibitions of her skill, and sell her autobiography. He at once sent Miss Paddock to dissuade the family from any such plan, and to bring Laura back. When this lady reached the Bridgman homestead, and their scheme was unfolded to her, she said:

"Oh, I know the doctor would disapprove of any such plan."

"That's enough, then," said Mr. Bridgman; "Dr. Howe has made Laura what she is, and we have no right to do anything contrary to his judgment."

Besides her meeting with Charles Dickens, Laura met many of the most distinguished men and women of her time and country. At one memorable dinner-party given by Dr. and Mrs. Howe during the winter of 1851-52, in honour of Kossuth, the Hungarian patriot, and his devoted wife, there were also present Longfellow, Lowell, and many

other celebrities. Laura was brought into the drawing-room after dinner. Kossuth conversed with her through the kindly medium of Miss Paddock's fingers.

Laura had a good many books read to her, but she enjoyed none more than Longfellow's poems. The touching idyll of "Evangeline" in particular made a deep and vivid impression on her mind; so much so, that she wrote the poet a letter with her own hand, telling him how much she liked "Evangeline"--a simple epistle which Longfellow values very highly.

When Laura had reached the age of twenty-three, it was felt that the time had come to decide as to her future. After careful consideration, Dr. Howe and her other friends thought it best that she should return to the bosom of her family, in the old homestead at Hanover. Laura was much attached to her parents and her brothers and sisters, and it was thought that with a share in the household duties to occupy her mind, she would be happy and content in the care of her relations.

But in the quiet, isolated farmhouse, where all were employed in domestic duties or the arduous labour of the fields, and had little time or inclination for social intercourse or conversation, Laura Bridgman, now a young woman, missed the pleasant life and companionship, the animation and the varied interests, of the institution. She seemed gradually to lose her interest in life, her appetite failed, and she showed every symptom of going into a decline. Dr. Howe was sent for, and he pronounced her to be slowly dying of nothing else than homesickness. On his return to Boston, the kindly doctor dispatched Miss Paddock to bring the poor girl back to the busy hive which she had come to love as "home." It was the depth of winter when Miss Paddock arrived at the Bridgman's home.

"I have come to take you home," she said to Laura.

"When do we start?" telegraphed the wasted fingers.

"As soon as you can eat an egg!" was the practical reply. Laura had been living on crust coffee or toast water for weeks.

A few days later the girl's constant prayer "to be taken to Boston" was complied with. But it was with the greatest difficulty that the journey was safely accomplished. It was only with the most unremitting care that, under the terrible weather conditions, the faint spark of life was kept flickering. It was at first feared that Laura had reached Boston too late, but with careful nursing she soon recovered health and strength among her old friends and companions.

Laura's education may by this time (1853) be said to have been completed, if that knowledge could be said to be complete to which she was always eager to add. She no longer had any special teacher, but shared some of the lessons of the other pupils, and was a respected

member of the large family at the institution. She made friends with many of the blind girls, and spent much of her time with the matron, Miss Moulton. Laura had, too, the pleasure of a daily visit from her mentor, Dr. Hose, a privilege which she valued very highly. Every afternoon she was taken by one of the teachers or attendants for a long walk.

When the annual vacation came round, Laura usually spent part of it at her old home at Hanover, and part with her friend, Mrs. Morton, at Halifax. After a time, as her circle of friends increased, she abandoned her journal in favour of letter-writing. She was a good and regular correspondent, and used to send special letters to all her friends on birthdays, and at Thanksgiving and Christmas.

The passing of the years brought changes in Laura as to us all. As a child and a young girl, the cultivation and education of her mental faculties was continuous and progressive. The dawn of each succeeding day opened out new vistas of thought and knowledge--fruitful communion with other minds. But with the departure of her last and favourite teacher, it seemed to her as if one of the links that connected her with the wonderful world of knowledge was broken. Apparently she began to realise her limitations, and the all too narrow confines of her silent, sombre, little world. Some of the eager zest and joyous dreams of childhood were gone, to give place to the calm steadfastness of womanhood. In her letters and her journal for this period we find less of the joy of life, and a plaintive note of resignation that is new.

In the year 1860 Laura heard of the death of her sister Mary. This bereavement appears to have had a marked effect in turning Laura's thoughts to things spiritual. She underwent a "religious experience," as a result of which she joined the Baptist Church in 1862. For several years afterwards a change seemed to have come over Laura's mind and general outlook on life. Her letters were peculiarly pietistic and formal in tone.

Daniel Bridgman, Laura's father, died in the autumn of 1868. By his will he left the farm and homestead to his son John, on condition that he gave a home to his mother and his sister Laura. John Bridgman, however, interpreted this provision in so niggardly a spirit as to make his mother and sister Laura unhappy and uncomfortable. Hearing that Laura felt uneasy about her future, Dr. Howe wrote to her mother in 1871 to assure her that, as long as Laura lived, she should have a home in the Perkins institution.

These latter years were to Laura made up of busy and peaceful and contented days. She rose early, and spent some time reading--usually the Bible--before beginning the day's work. She was fond of company, and after a long and busy day she keenly enjoyed any form of social intercourse until almost any hour at night.

As time rolled on, Laura grew older gracefully. Her character grew sweeter, and gentler, and mellowed with age. Of her it was said

with truth: "Few human lives have ever been open to the scrutiny that she was always subject to, and how few could stand it as well as she!" She retained her trim, slim, and erect figure to the end. For a long time she clung to the idea that she would marry, but latterly she looked always the prim little New England spinster she was fated to remain. She retained her fondness for dress, but she grew to realise the value of money, and was necessarily careful in spending.

The summer of 1875 was saddened to Laura by the knowledge of the failing health of her greatest friend and benefactor, Dr. Howe. He returned to Boston in October, and assisted by his daughter Julia and her husband, Mr. Anagnos (afterwards Dr. Howe's successor as principal), continued to take an active interest in his beloved institution almost to the last. He was stricken down on the 4th January, 1876, while on one of his daily visits, and never afterwards recovered consciousness, passing away on the 9th. His last moments were sacred to his relatives, but they brought in to the side of his death-bed the woman to whom as a child he had given, if not sight, understanding and the inward vision. "She was allowed to touch his features very softly, and a little agonised sound, scarcely audible, alone broke the silence of the solemn scene. All who were present deeply felt the significance of this farewell." So passed this great and good man, whom Whittier, in his poem, "The Hero," called "the Cadmus of the blind."

Laura pined after her beloved teacher and master, as if he who had given her what was almost more than life were really her father. She wished for nothing more than to follow him to the grave. Nevertheless, she lived on for many years--lived to take part in the celebration of the jubilee of her own entry to the institution. The festivities were kept up on her fifty-eighth birthday, the 21st December, 1887. She was much gratified with the gifts and the many kind wishes of which she was the recipient, and the jubilee helped to sweeten the closing years of her life.

The summer which was fated to be her last was spent at Hanover, but the winter of 1888-89 found Laura in Boston. She still continued to lead a busy, useful life as of yore, but seemed to be more dependent on the society of her friends than formerly. Laura fell ill in the spring of 1889. When she took to her bed she sent for a friend, who read to her passages from "The Imitation of Christ," which she called, "the peaceful book."

Laura grew gradually worse. Towards the end she tried to form some letters, but her hand was already stiffening. A friend guessed the word she was trying to form, and spelled the word m-o-t-h-e-r into her hand. Laura nodded and smiled. This was her last effort of consciousness before she passed quietly away on Friday, 24th May, 1889.

Her birthplace is also her resting-place. In a quiet corner of the churchyard at Hanover lies all that is mortal of Laura Bridgman.

But the pathos of the story of her shadowed life, and the fame of her achievements as the first to respond to the summons which called her forth into the light, have penetrated beyond her own New England home to the farthestmost parts of the earth. Her education marked a step forward and upward in the education of her afflicted brothers and sisters the world over.

Along the path that she so laboriously trod, others have been enabled to advance from the inner darkness and silence into the light and animation of the outer world--the world of joy and love and knowledge, and all that makes life worth living. Only those who can understand a human being with the yearnings of a woman cramped and confined within the faculties of a child, can appreciate to the full the nature of the triumph over herself and her limitations which Laura Bridgman, with the aid of her mentor, Dr. Howe, was able to achieve.

THE USE OF BEHAVIORAL OBJECTIVES IN REHABILITATION

by

Anne Yeadon
Rehabilitation Consultant
Inkster Yeadon Associates
New York, New York 10011

Introduction

To many readers in the field of blindness and rehabilitation, "behavioral objectives" may be a rather unfamiliar term found in educational journals or expounded in obscure technical treatises. In fact, the concept behind the formulation and use of such objectives for classroom instruction is extremely simple and straightforward. It is merely an attempt to establish an individualized educational process responsive to the specific needs and learning rates of individual students, which provides the instructor with an effective classroom management system. In addition, the use of objectives stimulates an ongoing dialogue between individual students and the instructor, and improves student involvement through encouraging direct participation in the rehabilitation education process.

Rehabilitation teaching methods are changing. The concept of measurable accountability is leading to a modification of the sometimes overrevered educational mystiques of the past. Instructors are more concerned with the real purpose of instruction--useful and applicable learning and thorough comprehension on the parts of the students.

In the same way, managers and administrators of agencies and organizations providing education, rehabilitation and similar services are recognizing the need for improved program structure based upon clearly defined goals, and improved program accountability based upon measurable criteria for goal achievement.

The mechanisms for goal formulation and progress evaluation, whether viewed at the instructor/student level or the management/director level, are all part of the same process. They reflect a hierarchical effort from director to student that attempts to answer the three basic questions:

1. Where are we going?
2. How do we get there?
3. How do we know when we've arrived?

Behavioral objectives are in themselves discrete entities, and the subject of numerous technical publications and papers. However, to truly understand their purpose and application to the rehabilitation process, it is necessary to examine the larger context within which they should be used. Thus, the first section of this discussion deals generally with the hierarchical implications of the "management and accountability" system of which behavioral objectives are a part. The remaining two sections of the paper examine the nature and use of behavioral objectives at length. Hopefully, this will provide the reader with a relatively comprehensive understanding of this fascinating subject. More importantly, I hope that it encourages the widespread introduction of this instruction, management and accountability process throughout the field of rehabilitation.

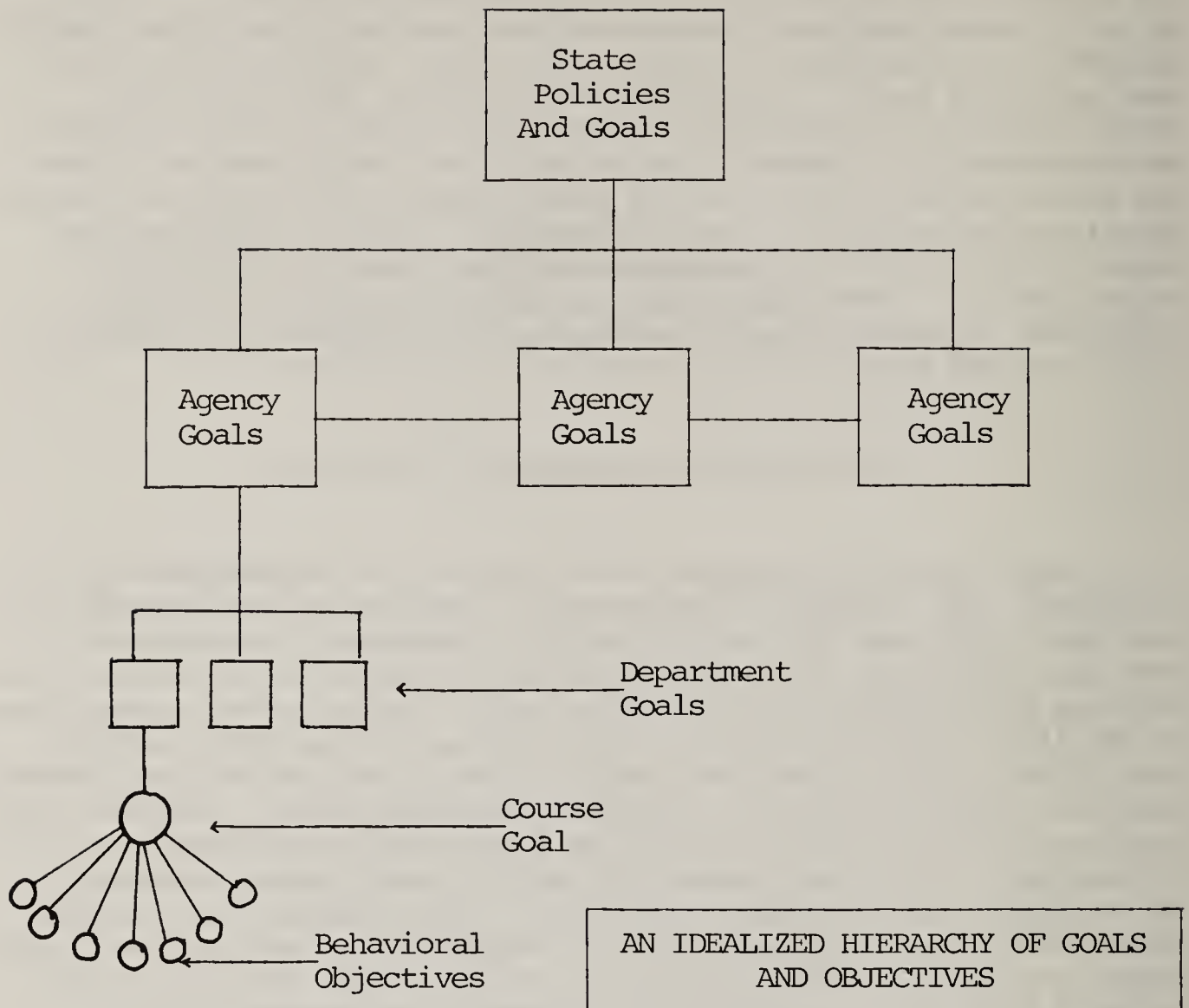
The Hierarchy of Goals and Objectives

Since the 1950's, the need for professional accountability has increased. The consumer is beginning to question the quality and availability of services he is eligible to receive. The taxpayer demands a definition of "good education" and questions why those eligible for services do not receive them. Funding bodies, particularly in the field of rehabilitation, require objective assessment of why they should invest monies, and need to know to what extent past monies have been used effectively. Some questions raised are, "How have the people served benefited?" "Are these people now absorbed and participating in their own community?" and "How many remain dependent on the agency and can this be avoided?" The recession of the 1970's raised other questions such as "Which should be the priority services within the field of human services?" "What programs could and should be cut?" "What criteria were being introduced to measure their relevance and impact?" and "Which programs should be expanded?"

When finances are scarce, it is particularly important that such decisions be made--but by whom and how? It often appears that we are masters at creating new agencies, departments and committees with well-intentioned but ultimately vague responsibilities. What we have not yet learned to do is to amend existing structures so that they perform precisely defined services more efficiently.

We urgently need to describe and measure the impact of service delivery within the field of blindness and rehabilitation. In order to do this, there must be a systematic approach that provides demonstrable behavioral evidence of how well we serve the visually handicapped population in terms of rehabilitation services.

We need to begin by defining a structured hierarchy of goals or targets. The diagram on the next page illustrates how this should operate and the following discussion provides additional details on a comprehensive goal-oriented rehabilitation system. Ideally, a state's rehabilitation department should define goals that reflect the state's intentions for serving its visually handicapped population.



All agencies serving the blind within the state should then cooperate to ensure that no need, as reflected in the state's goal(s), is ignored, and that services are not unnecessarily duplicated.

When an agency states its general goals, it is better able to develop an evaluation process whereby the effects of its services can be objectively recorded and their impact measured. There are many reasons why measurable goals should be established:

1. To locate gaps in service delivery;
2. To determine and justify current and proposed budgetary needs;
3. To determine and evaluate the agency's current role and function, and establish future goals and priorities;

4. To provide for consumer and staff involvement;
5. To determine whether projected goals are measurable, relevant and capable of achievement;
6. To measure the quality of agency performance through specific program evaluation processes.

When agency goals are clearly and measurably stated, the entire staff is provided with direction, a "destination," toward which they can work. The goals should be stated simply and identify observable facts that can be measured to determine whether the program achieves its intended purposes. Stemming from this agency goal, each agency-department should formulate its own set of specific goals that define how it plans to evaluate itself in terms of contributing toward the attainment of stated agency goals. Having defined separate sets of departmental goal(s), the staff should review them together and discuss conflicts, overlaps, duplications, and refine them accordingly. It is then the role of the direct service staff of each department to formulate specific behavioral objectives and criteria for instructional purposes that reflect each course goal, i.e., the definition of what the student is to be taught, how student performance is to be measured and thus, how the ultimate success of a program will be judged.

Preparing this hierarchy of goals and objectives is not easy. It involves the participation of federal and state agencies, financial bodies, the agency director, staff at all levels and consumers. Inevitably, the values of each group may appear to conflict, i.e., the administrators may be concerned with "numbers," while line staff and consumers are usually more concerned with "quality" of service. There will also be a tendency to state objectives in ambiguous terms, i.e., "To improve the quality of life." Thus, it is essential that staff work together during this process so they have the opportunity to understand the judgments, values and rationale behind the development of each set of program goals and objectives.

The agency then needs to develop evaluation tools, i.e., instruments and procedures, in advance of what is to be evaluated. "Instruments" may be questionnaires, interviews, demonstrable performance "tests," multiple-choice tests observation, follow-up studies for use after the student has left the agency, feed-back group sessions with students and families, cost benefit analysis, and surveys and assessments of state/consumer advisory groups.

In addition, there are also standards manuals published by the Commission on Accreditation of Rehabilitation Facilities (CARF) and the National Accreditation Council for Agencies Serving the Blind and Visually Handicapped (NAC). NAC has also developed a method of self-evaluation for facilities offering services to the blind and visually handicapped. Both these organizations are making significant contributions to the improvement of service delivery and program accountability.

There are many evaluation models, both computer-based and manual systems, within the fields of industry, medicine and education available to assist an agency to develop an evaluation process to meet its individual needs. There are also private consultants available within the field of blindness and rehabilitation. However, an agency's course of action will depend upon:

1. What is to be evaluated;
2. The relevance and availability of previous compiled data;
3. The degree of accuracy required;
4. The time period to be evaluated;
5. The expected cost benefits of the evaluation to the program/agency.

One commonly used model, for example, involves the selection of a representative sample of the population to be served. This "experimental" group is exposed to the rehabilitation program and changes in their levels of performance--ability, relative to the agency's stated objectives, are compared with those of a "control" group, namely, a group similar to the serviced group, but who have not been exposed to the same rehabilitation services. The abilities of individuals in both groups are evaluated and recorded systematically, both before and after the exposure to rehabilitation services of the "experimental" group. In this way, significant differences in skill levels, independence quotients, or other evaluation factors can be measured and cause and effect assumptions made.

Following evaluation, the agency should ensure that it incorporates within its structure an ongoing functional, formal and systematic procedure for responding to and dealing with the findings of such evaluations. The evaluation results should be written with appropriate recommendations for changes and refinements, and shared with all who were involved in defining the original hierarchy of objectives.

The effective implementation of recommendations identified as a result of program evaluation may be a difficult process. There is often a reluctance to change to "unknown," unproved, and seemingly, threatening new methods and procedures. Those involved in implementing the change will need to be empathic and explain, in detail, the rationale for making the change and the positive implications of the recommended alternative strategies.

The Preparation of Behavioral Objectives for Instruction

An overview:

Teaching, both within and outside the field of rehabilitation, has rarely been held objectively accountable. In the past, teaching methods have varied, both in content and quality, with the instructor.

Quite often, instructors within the field of rehabilitation have been reluctant to question or experiment with unfamiliar teaching methods. Of course, as has been proven many times over, it is possible to teach by intuition and imitation; and there are many who effectively do so, but in order to advance the development of the rehabilitation field, it is now necessary that we improve, experiment with, and evaluate our activities. It is time, for example, to involve the learners in the rehabilitation process and to allow them the opportunity to share the responsibility for their learning and adjustment achievements. Instructors have played the role of "judge" too long in their efforts to teach, assess and rate the learning progress of students. As a result, such students are invariably unaware of how such ratings are assigned, and have little understanding of needed adjustments and improvements.

Behavioral objectives can provide a methodological instructional process that enables anyone, including the learner, instructor, supervisor, director, board member, and financing body, to evaluate objectively the learner's progress and current abilities. Teaching through the use of behavioral objectives is a challenging, exciting and stimulating process for both instructor and learner. The process enables the learner to be placed in a position where he knows what is expected of him and what must be done to accomplish his stated goals.

Robert F. Mager, in his book "Preparing Instructional Objectives" (1962, Fearon Pub., Calif.) provides a concise method for preparing instructional objectives:

"First, identify the terminal behavior by name; you can specify the kind of behavior that will be accepted as evidence that the learner has achieved the objective. Second, try to define the desired behavior by describing the important conditions under which the behavior will be expected to occur. Third, specify the criteria of acceptable performance by describing how well the learner must perform to be considered acceptable."

Specificity is the key to the successful formulation of objectives. Among the words to be avoided are "to know," "to understand" and "to appreciate." Among the words that should be used, as they are open to few misinterpretations are "to write," "to identify," "to differentiate" "to construct," and "to demonstrate." As Mager emphasizes:

"Until you have described what the learner will be doing when demonstrating that he 'understand' or 'appreciates,' you have described very little at all."

A typical behavioral objective is presented on the next page along with a technique, which if used by the student, should ensure compliance with the criteria. As indicated, objectives should begin with a verb that defines observable and terminal behavior. Also,

GENERAL OR CURRICULUM OBJECTIVE

SEATS SELF AT TABLE

Criteria Referenced Behavioral Objective

When presented with a chair which is drawn up to a table, desk, etc. the student will demonstrate the ability to pull out the chair, seat himself and bring himself and the chair towards the table, by:

Minimum Criteria Required for Successfully Accomplishing the Task

- a. *locating* the back of the chair without disturbing surrounding items.
- b. *bringing* the chair out from under the table, no further than arm's length.
- c. *seating* self without disturbing surrounding items.
- d. *avoiding* contact with the table, desk, etc. when seated.

A TECHNIQUE

Task Analysis

1. The student should use his right hand to locate the back of the chair. He should place the right side of his body to the left side of the chair and bring the left hand forward to locate the front edge of the table.
2. With the right hand, the student should pull the chair out from under the table, until the left front leg of the chair is even with the right foot.
3. He should remove the right hand from the chair and bring it alongside the left hand. Both hands should now be in contact with the front edge of the table.
4. The student should take one step forward toward the table and bring the body in contact with the front edge. He should move his right leg to the right, in front of the chair seat and bring his left leg over to meet the right.
5. Making sure that the backs of both legs are touching the chair seat, the student should lower his body down to the seat.
6. With slightly cupped hands placed on either side of the hips the student should locate the underside of the seat.
7. He should raise his body slightly from the seat and, exercising pressure on the feet, and with cupped hands, bring the chair forward until the body almost touches the tables.

the instructor will need to stipulate the conditions under which the behaviors are to take place and define the minimum criteria required for successful accomplishment of the task/objective to take place.

How do instructional objectives assist the instructor? More important still, how do they improve the quality of learning? Here, at least, are a few answers:

1. They provide the student/learner with criteria that enable him to measure his own performance.
2. The performance criteria enable student and instructor to work together in defining weak areas of learning and in devising remedial actions.
3. They encourage more thorough course preparation by the instructor.
4. They provide a comprehensive curriculum for the instructor that can be used as a basis for preparing individualized courses to reflect the needs and goals of individual students.
5. They are capable of direct transcription into braille, large print, or onto tapes and can be used directly by the visually handicapped student.
6. Their use recognizes the different learning rates of students and allows the instructor to spend more time individually with each member of the class, thus making the best utilization of instructor time.
7. The whole process encourages a constructive and personal dialogue between the instructor and student, encourages learning initiative and enthusiasm on the part of the student and provides the basis for accountability for both the instructor and student.

In addition, the behavioral objectives approach provides the instructor with an invaluable classroom management tool:

1. It provides a structured curriculum for recording comparative student learning rates in order to evaluate resource allocations against instructional strategies.
2. It provides an ongoing checklist of individual student progress.
3. It provides a basis for initial, in-program and post-program student evaluations and comparisons.
4. It provides a structured basis for goal-setting by students.
5. It enables students to "manage" themselves, or at least participate directly in the management process.

Of course, behavioral objectives are not a total panacea for instruction and learning problems. Many educators emphasize, quite

correctly, that there are aspects of learning that cannot be stated or measured in a behavioral manner. Some fear that overconcentration on behavioral elements may tend to detract from the importance of other educational factors such as the ability to analyze, synthesize, create and evaluate ideas, establish values and develop critical faculties. Expressed in terms of a more elite vocabulary, behavioral objectives are seen as reinforcing the cognitive (mental and intellectual) domain of behavioral activity, while ignoring, or at least inadequately dealing with, the affective (attitudes and emotions) domain. The fear is that rather than dealing with the whole individual, behavioral objectives merely refine one set of skills and by doing so, possibly give undue recognition to mental or intellectual processes, to the detriment of the attitudinal, emotional and even physical development of the student.

Of course, the argument is fallacious. No educational process can deal equally with all these elements. In fact, the main distinguishing characteristic between different educational theories is the relative emphasis placed on each of these domains. Some theories emphasize the affective domain while others insist that cognitive or psychomotor (physical) skills are the most essential requirements for human growth and development.

In the rehabilitation process there are two prime behavioral requirements:

1. To restore the student's positive self-image, his will to learn or relearn, and confidence in his ability to achieve his stated goals;
2. To provide the student with sets of refined skills that enable him to undertake any tasks that reflect his stated goals.

Behavioral objectives, while directed primarily toward the latter, are structured to maximize student initiative, encourage ongoing self-accountability, increase student independence and, most importantly, are designed to enable the student to select those behavioral skills he needs for the achievement of his own stated goals.

Thus, it can be argued that the behavioral approach, if used appropriately by instructors, is perhaps the most effective way of providing students with the skills and attitudes necessary to live confident, independent and satisfying lives. Again, to express it in professional terminology, it provides the basis for experimental behavior that interacts and links together the separate taxonomies, or classifications, of the cognitive, affective and psychomotor domains.

Instructors must continually strive to use behavioral objectives for the total benefit of each student. Any lack of flexibility or a tendency to use instructional techniques as a rigid teaching system immediately reduces the effectiveness of the process. The method

requires constant sensitivity and initiative on the part of the instructor, and this, of course, is why the process is so effective in terms of student progress. Of course, no amount of educational theory is likely to change an apathetic instructor. What the behavioral process offers the enthusiastic instructor, however, is improved learning processes, more effective class management and evaluation procedures, and most important, more confident and better equipped visually handicapped students.

A significant factor to remember is that many of the visually handicapped population are adults and this type of system encourages active participation in their own learning processes. In our efforts to promote independence on every conceivable level, it is our responsibility to ensure that the student is involved in his rehabilitation process and feels a measure of control over his situation. The older individual, in particular, has his own individual style and pace of learning and needs to be treated as a mature adult even though he may have fears and anxieties toward learning. He needs to realize immediate benefits and be sure the learning material is relevant to his personal and individual needs. The instructional objectives process recognizes his mature years and contributory life experiences. Older persons are generally goal-and-action oriented, have definite needs and are generally motivated to learn relevant skills. They tend to be impatient learners and they need to know, quite clearly, what is expected of them. Thus, with the adult, it is desirable to recognize and respect maturity and life experience and adopt an andragogical (adult learning) approach rather than a pedagogical (child learning) approach to instruction. The behavioral objectives approach is ideal in this respect.

It is time for professionals within the field of blindness rehabilitation to take a good look at the way they teach. They must constantly ask themselves how to organize instruction, how to deal with instructor/student relationships, how to maximize human abilities and how to involve the student in the learning process. Openness to change, to experimentation with new ideas, to evaluation of their individual effectiveness, is crucial to the growth of any service delivery system. To acquire such an "openness" the instructor needs to develop an empathic understanding with those he serves and must closely observe, without prejudice, his own and his student's behavior when experimenting within new learning/teaching situations.

Designing a curriculum:

A curriculum is a listing of specific student behaviors or skills that may be demonstrably achieved as a result of instruction in any particular class. It can be likened to a road map that the student must use in order to reach a goal or "destination." Rehabilitation instructors should formulate their curriculums based on several specific inputs:

1. Their own professional knowledge, experience and assumptions regarding student needs.
2. Student interviews to determine needs, preferences and aspirations in terms of their immediate and long range goals.
3. Discussions, both formal and informal, with other instructors or professionals in the field. Ongoing critical dialogues between instructors in the same agency can be particularly constructive.

Every curriculum must be flexible. Teaching within the field of rehabilitation is unlike teaching within the regular school system where age levels are often clearly delineated and students may live in similar social environments and conditions. A rehabilitation class curriculum must be extensive and flexible enough to provide for a wide heterogeneous group with contrasting characteristics of age and interests, individual learning abilities and aspirations, life experiences, and achievements. Certain areas of a given curriculum may demand greater emphasis, dependent on the majority of individual student needs.

Writing a curriculum:

A curriculum should emphasize specific areas of expected student behavior that are demonstrable and observable and can be realized as a result of the instructional experience. A curriculum is a listing of general curriculum objectives that describe precisely what the student can do after instruction.

Although preparing a "behavioral" curriculum may seem a relatively straightforward task, many instructors experience considerable difficulties. The tendency is to focus on the instructor's activities rather than on the expected student outcomes resulting from instruction, or to define the learning process, i.e., "develops an awareness of different writing aids," rather than, "demonstrates the use of different writing aids." By using the latter--a measurable behavior--the instructor has described what the student will specifically demonstrate as a result of the learning experience.

In addition, the instructor should be especially wary of forming ambiguous outcomes, e.g., "learns symbols on a tactual map." This is unclear. Does the instructor intend the student to:

1. Recall the symbols on a tactual map?
2. Identify the symbols on a tactual map?
3. Interpret symbols on a tactual map?
4. Construct a tactual map using symbols?

Thus, the word "learn" informs neither the instructor nor the student what the student should be able to do as a result of mastering this objective.

In addition, the instructor should also be wary of including two or more behavioral outcomes in one general objective. For example, "Understands and Uses the Sighted Guide Technique." Here we have two behaviors--"understands" and "uses"--and in order to know how the student demonstrates his ability in either one, it is necessary to write separate objectives. The student may "understand" the concepts of the sighted guide technique, but may not be able to demonstrate its use. Thus each ability should be evaluated separately.

The essence of writing an effective curriculum is for the instructor to:

1. Focus his attention on what the student will be able to do (the terminal behavior) as a result of the learning experience
2. Begin each objective with a verb.

The following are sample objectives taken from typical performance-oriented curriculums:

1. Demonstrates positioning of the lower arm protective technique.
2. Utilizes the lower arm protective technique.
3. Utilizes a directional reference system.
4. Tactually establishes a perpendicular line of direction.
5. Walks perpendicular to traffic sounds.
6. Walks past a given sound source.
7. Draws geometric shapes.
8. Identifies a shape when guided by sound.
9. Describes methods of clothing identification.
10. Write the letters A-J in Grade 1 braille.
11. Writes own signature.

Criterion--referenced behavioral objectives:

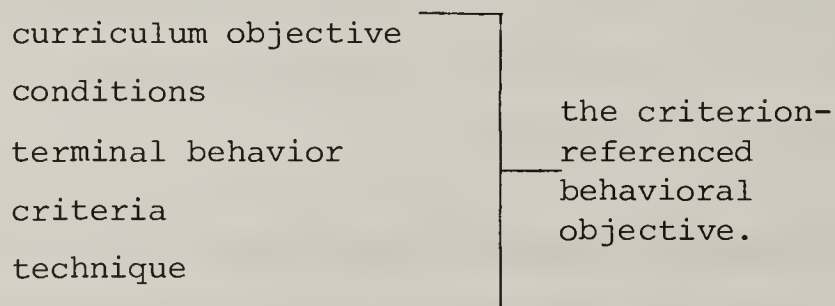
The next essential step is to identify the circumstances under which the student is expected to perform the stated objectives in the curriculum, and in addition, provide criteria, i.e., specific learning outcomes, that clearly describe a minimum level of acceptable student performance. There are two main types of specific, behaviorally defined, objectives. The first is know as norm-referenced; the second as criterion-referenced.

Norm-referenced objectives are used to compare one individual with others. They demonstrate, for example, whether the learner has more or less knowledge and/or interest than the other students in his group. The criterion-referenced objectives compare the student not in relationship to others, but in relationship to defined behaviors he will be expected to demonstrate. The criterion-referenced objectives provide an individualized instructor/student approach, ideal for enhancing student independence, especially for the older student, within the field of rehabilitation.

In order to prepare criterion-referenced objectives, it is necessary for the instructor to analyze the terminal behavior in each objective of the curriculum. For example, in the task "Utilizes the Upper Forearm Protective Technique," the instructor should determine what the student must demonstrate he can do in order to successfully master the objective. The purpose of doing this is to avoid assumptions, occasionally made by instructors, that the student possesses certain prerequisite skills. In addition, by analyzing the task and clearly defining those behaviors which are essential to the successful accomplishment of a given objective, the instructor and student are more able to pinpoint problem areas. Thus, deficiency in contingent behaviors is recognized by the student failing to meet specific criteria. This in turn enables the instructor to focus on specific areas of identified need.

Task analysis is a method of recording, in an organized manner, the skills and behaviors that are necessary to accomplish a stated terminal behavior. Many instructors find it useful, when preparing criterion-referenced objectives, to outline a technique that clearly states how a given task should be performed. From such a detailed exercise, the instructor will be able to test if the criteria he had initially identified as being relevant to accomplishing a given task successfully, correspond to his detailed technique describing how the objective may be successfully accomplished.

The sample objective previously illustrated shows how each of the five parts:



is an integral part of the whole.

Objectives such as the one shown can be presented to the students and their current abilities evaluated in accordance with the stated criteria. Once the instructor has described and demonstrated the technique normally used to attain the objective, and

explained the criteria, the students may receive the objective, which should be in either braille, large print or on tape, to enable independent study and practice of the method. Should the students experience difficulties attaining success with any one criterion, i.e., "locating the back of the chair without disturbing surrounding items" (see example), then the instructor should analyze the situation and may consider constructing a separate sub-objective that involves the students identifying, describing and locating different parts of a chair. Wherever possible, however, the instructor must design in advance, objectives that are relevant to the individual student's current and not assumed abilities.

The Use of Behavioral Objectives

A set of behavioral objectives that form the basic framework for a teaching course can be used in six primary ways:

1. Initial evaluation of the student (prior to instruction);
2. Student information;
3. Instructor's checklist;
4. Instruction;
5. Classroom management;
6. Ongoing, final and follow-up evaluation of the student.

The chart on the next page demonstrates an example of one approach and shows the relationship between these component parts during the instructional process. The following discussion provides a brief summary of each of these parts.

The Evaluation Process (1 and 6)

The evaluation process consists of three primary elements:

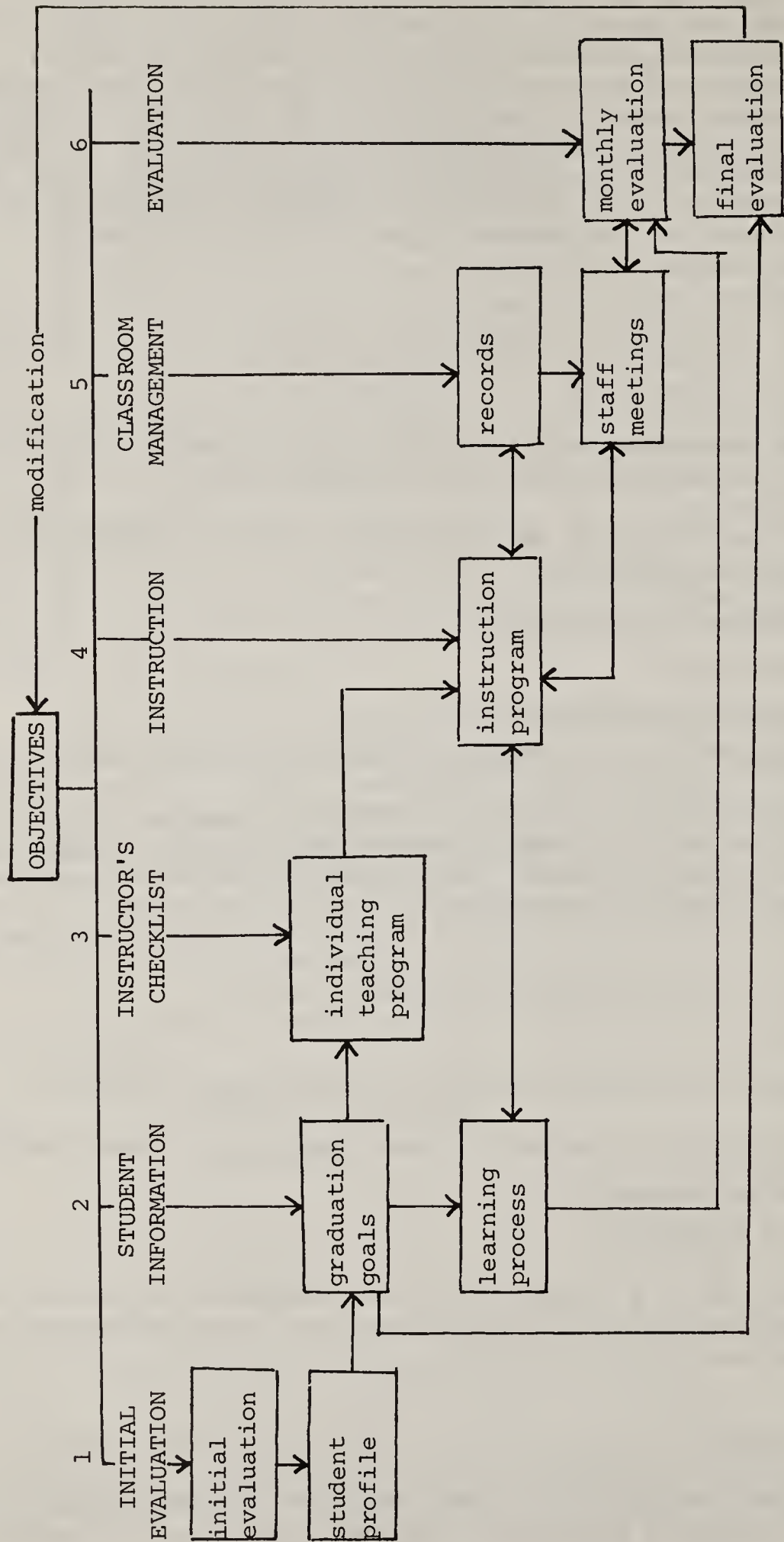
1. Initial evaluation and the development of a student profile.
2. Ongoing evaluation.
3. Final evaluation.

The following is a discussion of the comprehensive evaluation process that utilizes behavioral objectives as a prime determinant of progress through and after the course.

Initial evaluation:

- a. In order to provide an individualized program for each student, it is necessary to obtain a detailed assessment of a student's

THE USE OF OBJECTIVES



NOTE: "Toward Independence. The Use of Instructional Objectives in Teaching Daily Living Skills to the Blind." Anne Yeadon, American Foundation for the Blind, Inc., New York, 1974.

skill level within the first few days of entry into the course. This can be accomplished through the use of carefully prepared tests that establish his entry level for the course. These tests consist of sets of criterion-referenced behavioral objectives selected to reflect the scope of program curriculums. Prior to the performance testing, the instructor and the student should discuss class activities and goals. The student should be asked to describe his past exposure in this particular area. The relevance and purpose of the evaluation should be thoroughly explained to the student. The fact that the student is not required to compete with other students towards a set of "norm" standards, and that his performance is not relative to the group performance, should be made quite clear. This will help to minimize unnecessary tension during the initial evaluation and throughout the course. The "class goal," namely, the primary aim of instruction in each instructional area, should be discussed with the students and each student should relate his or her specific goals to the class goal. For example, the student, prior to joining the course, may have formulated definite plans regarding a vocational training program, educational programs, employment or leisure time activities. Home circumstances may call for the student to be living independently within a limited time period, or, in certain cases, the student may be a parent or spouse with home responsibilities.

Student profile:

b. The student profile, i.e., the student's total needs, aspirations and current abilities in relation to the overall goal of rehabilitation adjustment, is compiled when instructors, social worker, psychologist, medical personnel, and possibly a community worker familiar with the student's particular living situation, provide individual reports based on their evaluations of the student. The reports, together with all the findings and recommendations, are best presented during a student/staff meeting at which the purpose is not only to involve the student in a discussion of findings, but to demonstrate the rehabilitation "team" approach in which the total needs of the student are considered. The recommendations and defined student's goals, as determined at the meeting, should be monitored on an ongoing basis to ensure all are met and that the student's activities at the agency do not inadvertently cause the student to waver from his original planned course. It should be recognized, however, that student-set goals, at any time, should be considered flexible and subject to modification as aspirations change. Constant evaluation, however, is crucial to measuring the impact of service delivery, and without prior determination of a student's original abilities, it is impossible to measure the success of instruction.

Ongoing evaluation:

c. During the course, the student will be evaluated each time he considers he has completed a given objective satisfactorily. In this way, it will be possible to establish whether or not the student

has thoroughly mastered the objective before proceeding to the next one. It will also reveal the student's present behavioral ability after receiving instruction. For the student who has mastered the objective, the test should reinforce the student's confidence and pride in his behavioral changes.

Although student evaluation is an ongoing process, there should be a formally agreed upon time, e.g., monthly intervals, when student and staff again come together to review progress. Objective evaluation reports are again submitted, comparisons made to previously set goals and objectives, and new ones defined for the next monthly evaluation.

Final evaluation:

d. A repeat of the initial evaluation is the third use of objectives in the evaluation process. In this case, the evaluation tools are used to measure a student's behavior prior to leaving the course. One important aspect of the final evaluation should be to assist in the improvement and modification of the course. Hopefully, the student has, at this point, reached a behavioral level on the learning continuum which has furnished him with the basic skills to cope with an independent living situation. The final evaluation, therefore, should not be introduced for the sole purpose of improving student behavior, but to obtain specific feedback on the comprehensiveness, validity and effectiveness of the course as a whole, which can then be used to amend, or adapt, the existing curriculum.

As previously discussed, agencies should also undertake at least one follow-up evaluation of student behavior after course completion to determine the real effectiveness of the rehabilitation process. The evaluation documents used during rehabilitation education are usually adequate for this process.

Student Information

Graduation goals:

a. As discussed earlier, graduation goals based on student-defined needs and aspirations should be defined following the initial evaluation and will invariably be modified during the course of instruction. These individualized goals are monitored throughout the rehabilitation process but especially during the monthly evaluations when the staff and each student meet, and assess joint progress.

Learning process:

b. The "starting point" of instruction will be dependent upon feedback received from the initial evaluation and the student's stated goals. The feedback establishes the student's position on the learning continuum.

During the instructional-learning process, the student should be in a position to assess his/her own progress. Feedback on his/her overall progress is achieved through the monthly meetings when the student and instructor discuss the monthly progress report. These reports are compiled on factors such as the student's progress, problem areas and, goals. During class, and if time permits--at the end of class periods, there should be discussions between the individual student and the instructor with regard to any persistent problem areas, including newly discovered problems, present progress, and future instruction. In addition, the instructor should be available during each day for private consultation. The student should be encouraged to use these periods to discuss any problem areas that may have been encountered. The relevance and purpose of behavioral objectives must be explained to the student. The objectives, including the specific criteria for success--the criterion-referenced objectives--should ideally be given to the student, either verbally or in written form (braille/large print). The "means" of achieving the criteria (the technique) should be explained to the student by the instructor on an individualized basis. The "means" may vary with each student according to his/her general aptitude, such as his/her ability to grasp a given concept, his tolerance level, and his/her past learning experience in related fields. There is evidence that some students can learn quite well through independent learning efforts whereas others need highly structured teaching-learning situations.

Instructor's Checklist

The general objectives are used as the instructor's checklist and provide a sound basis for gauging the student's abilities and his level of mastery of individual objectives. It is essential that the instructor, when testing a student, follows the specific criteria that have been stated in the objective. Little is achieved if the instructor judges acceptability purely on an intuitive level. This can happen if only the "title" of the objective is used as a test, which in no way informs the instructor or the student of the criteria for judging success.

Instruction

In the classroom, the instructor plays the role of tutor, observer, diagnostician and group leader. The instructor must be quick in adapting to the individual tasks which are being attempted by each student and the unrelated questions of individual students. He, therefore, needs to be thoroughly familiar with the objectives and related techniques. Hesitancy or uncertainty on the part of the instructor could create a "credibility gap" and reduce the trust of the student.

When the instructor is not instructing, he should be observing the students, always making his presence known, suggesting appropriate corrections in behavior, offering encouragement, and helping to build a relaxed relationship between himself and each student. During the observational period, he should be able to pass quickly from one student to the next to ascertain that everything in the class is running smoothly.

The instructor will also have to formulate fresh objectives. These may have to be prepared during a class period so student and instructor may work together. The instructor's desk should, therefore, be placed in a position where he is able to write out objectives, either in large print and/or braille, quickly and efficiently in order to avoid neglecting other students.

Classroom Management

A carefully defined set of objectives enables the instructor to keep precise records of where each student is on the learning continuum, what objectives he is working on at any given time, and how well the student is mastering the given objective. A Daily Note Record is a convenient form for systematically recording the objectives the student is working on. After each lesson, the instructor can list the task(s) introduced, whether or not it was accomplished and comments on any notable successes and/or problems the student experienced. If time allows, it is recommended that student and instructor do this together. This record is mainly for the instructor's own use as a memory-refresher for each successive lesson. In addition, by using the specific criteria appropriate to each objective, "problem areas" can be readily diagnosed and remedied.

An efficient class management process that uses instructional objectives and encourages student independence allows more time for the instructor to provide individualized instruction. However, in order to construct, plan and implement a program in an effective manner, the instructor must also undertake the rescheduling of student's class periods, the writing of monthly reports, ordering materials, updating objectives, adding new objectives and continuous study of students' files. All these tasks require free time in order that the instructor's class may run efficiently. This free time may also help avoid the overrigidity of attitudes and approaches, often characteristic of a harassed, overburdened instructor.

A final prerequisite of successful instruction, both in individual areas and throughout the course as a whole, is regular meetings of all members of staff. These meetings should be held at predetermined intervals and their primary function should be to coordinate on a continuous basis, individual class goals with the overall course goal.

Summary

Most students are, in the main, unaware of their own individual potentials, but eventually, through the full use of the behavioral objectives method, their confidence and self-esteem can be increased by encouraging them to develop their own unique abilities, to judge the levels of their own performance, and to distinguish their own problem areas.

This system represents a step forward in enabling handicapped people to regard themselves as individuals with true potentials. We must abandon the apparent "easy" methods of teaching that often tend to limit the individual's growth. Teaching on an individualized basis, using behavioral objectives as a teaching framework, provides a basis for the student and the instructor to work together towards the realization of the student's inherent potentials for learning and enjoying a productively independent lifestyle.

VISION-UP WITH MULTISENSORY IMPAIRED CHILDREN:

ADAPTATIONS AND RATIONALE

by

Maurine Otos, Coordinator
Oregon Programs for Deaf-Blind
Department of Education

Introduction

Project Vision-Up is being used in many Oregon programs serving multihandicapped sensory impaired children. The staff members responsible for assessment and development of individual education plans have found Vision-Up to be a useful and reliable tool toward the fulfillment of planning and implementation responsibilities. Its value has been enhanced by some adaptations in the curriculum and the methods for monitoring child progress. Some of these adaptations and the rationale for Vision-Up as an assessment and curriculum tool are discussed in the narrative that follows.

Assessment

The procedure for initial assessment of each child is followed as suggested in the Vision-Up curriculum handbook. Parents or one of the primary care-givers sort the assessment cards into three piles indicating the (1) skills or concepts the child has, (2) those the child does not have, and (3) those just being learned or for which there is no assurance of their having been learned. It has been found that this process is an effective tool to develop parent or caregiver awareness of the child's capabilities and of developmental sequences to come.

Following the card sort, the teacher records the skills and concepts the child has attained and notes the level of development reached for each. Next, each skill or concept in the curriculum for which there is not satisfactory attainment is reviewed as the card sort provides only a sampling of the total number of concepts and skills to be measured. When reviewing each of these, it is important to give credit for developmental skills no longer observable that were prerequisite behaviors for more complex skills. This is particularly evident in the areas of motor development.

Multihandicapped sensory impaired children often evidence many developmental gaps. The missing skills or concepts may be those necessary for more complex learning to occur. Therefore, one must not assume that all skills and concepts that were not included in the initial assessment have been learned. The review of each of these items up to the measured performance level can be accomplished by further interviews with the parents or caregiver and by observation of the child over a period of time.

The completed assessment is recorded two ways. The bar graph provided with the Vision-Up set is filled in using a color to represent the child's baseline functioning. Then the skills and concepts that show evidence of partial mastery are circled with a pencil. These circles may indicate realistic objectives to be included in the child's educational program. At the top of the page, the date of assessment and the color used on the bar graph is recorded.

Every few months, the bar graph is updated using a color different from the one used for the previous assessment. This color coding system indicates both amount and rate of progress. Also, it provides evidence indicating a lag in any of the major developmental areas, and may help the teacher decide to plan a more concentrated program in some of these. Appropriate program placement decisions can be determined using this type of information.

Next, a set of all the curriculum objectives is established for each child. Each item the child has mastered has a line drawn through it with a colored opaque accent marker. The date is recorded by the baseline level for each area. This curriculum set is used for that child until the developmental potential is reached, and can serve as a continuous assessment tool for several years.

Other assessment tools such as the Callier-Azuza Scale may be used to validate findings, particularly for language development, since the Vision-Up assessment and curriculum is designed for non-hearing impaired children. However, many of the preverbal behaviors are appropriate for assessment and the inability of a child to perform the language and speech behaviors described may help to substantiate a suspected hearing or language disorder. Overall, it has been found that assessment results are usually consistent with those obtained with other developmental assessment tools.

Program Planning

Vision-Up has been an excellent tool for planning balanced individual educational programs. Many of the multisensory impaired school age as well as preschool age population function within the developmental range covered in this curriculum. The assessment information provided by the graph and curriculum guide quickly indicate (1) levels of development, (2) gaps in development, (3) skills and concepts just beginning to emerge, and (4) comparisons of

developmental levels among the areas. The assessment information also alerts the teacher from including educational objectives that may be inappropriate because the child does not have the necessary developmental prerequisites.

For example, it would not be wise to try to teach a child to "zip a zipper," a three year level skill if the child has not learned a "neat pincer grasp," a twelve month level skill. Neither would it be feasible to expect a child to "make simple requests as an indication of his desire to have something that is not in his immediate environment" if he has not gained the concept of "object permanence." Thus the assessment information is a helpful guide for planning realistic goals and objectives.

Most curricula for handicapped children seem to be designed for teaching skills in areas such as motor, self help, language and academic or preacademic. There are few programs that include cognitive developmental sequences from birth. Cognitive development implies the growth of "knowing" or conceptualization. Thus a child learns to know when to use the skills he has. The goal of an appropriate educational program is to assist each child to achieve his maximum level of independence. The degree of independence achieved is dependent on knowing where and when to do appropriate activities. Many programs are adequate for teaching the skills required to achieve a degree of independence, but it has been observed that many of the multihandicapped population do not generalize the skills learned to the environment in which they should ultimately be used. By including objectives for cognitive development in the child's program plan, opportunity is provided for both skill and concept development.

The inclusion of such objectives could possibly reduce the amount of "splinter skills" being learned. These are isolated skills that have little meaning and are not likely to be used or initiated outside of the environment in which they are taught. There are children who may not have the potential to develop beyond the early stages of cognitive development, yet may learn skills far beyond their concept level. These children may not develop the quality of judgment required to initiate and generalize appropriately, but will use their skills when cues are provided. The population of multi-handicapped sensory impaired children include a wide range of functional potential. This potential may not be accurately predictable during the child's younger years. Therefore, it seems imperative to provide opportunities for growth in all developmental areas including cognition.

It has been observed that many vision-hearing impaired children remain several years in the sensory-motor stage of development as described by Piaget. The realization of object permanence often develops several years later than expected for non-sensory impaired children. Research also indicates that children do not learn to use language as a real communication tool until object permanence and a means-end relationship has been acquired. Concept development occurs

as a result of the child's awareness and interaction with the environment. Multiple sensory impairments and sensory impairments combined with processing or integrative dysfunction produce tremendous barriers for the child's awareness of, and opportunities to react to, the environment.

If a multisensory impaired child is (1) stimulated by, and gains interest in, his environment, and (2) has been assisted to make associations between the source of stimulation and himself, he may learn to accept, remember, and be curious about the world outside of himself. He may learn not only to react to, but act on, his unfamiliar world in increasingly complex ways.

Multihandicapped sensory impaired children are slow in learning to imitate and interact with objects in their environments. Their interaction with objects is often for the purpose of producing self-stimulating sensations. Some children become creative in constructing the means for fulfilling their need for self-stimulation, but they are not really learning to expand their knowledges of the environment. The activity is an egocentric sensorymotor experience with limited potential for productive learning.

If a child is taught to interact with the environment and learns to locate and manipulate the many things available to him in increasingly complex ways, the potential for developing concepts leading to more independence is increased.

The Vision-Up curriculum contains ideas arranged in sequence for activities that can provide a learning climate designed to stimulate concept development as well as skills.

Individual Education Programs

Each child's program can be developed to include several objectives. A combination of several skills and concepts can be worked on and tracked daily. A skillful teacher and aide can put before the child a few carefully chosen materials and structure the learning situation to stimulate the simultaneous development of several skills and concepts. Several objectives can be included in a fifteen minute learning session.

Example:

Gross Motor

Stands with support

Fine Motor

Scissors grasp (Finger use)

Raking with thumb side of hand (Hand use)

Transfers object from hand to hand (Object manipulation)

Cognitive

Lets go of object to reach for another
Looks in direction of fallen object
Uses container to hold objects
Finds hidden object
Reacts to stimulation from an adult acting on an object

A table to provide support, blocks, a piece of cloth and a container can be used to stimulate a combination of cognitive, gross motor, and fine motor skills. Creativity by a skillful teacher, aide and parent can provide several combinations of activities designed to attain objectives that provide enjoyment interest for the child.

Tracking child progress can be accomplished a variety of ways. One of the least complex methods is to record daily on the child's program sheet if the objective was met (x), was not met (0) or if an attempt (a) was made by the child to perform the objective.

Example:

	<u>M</u>	<u>T</u>	<u>W</u>	<u>TH</u>	<u>F</u>
Transfers object from hand to hand	0	0	a	a	x
Lets go of object to reach for another	0	0	a	x	x

Another system that provides more information about the child's behavior is to compare the number and type of responses with a base level of opportunities presented.

Example:

	<u>M</u>	<u>T</u>	<u>W</u>	<u>TH</u>	<u>F</u>
Transfers object from hand to hand	$\frac{0}{5}$	$\frac{0}{5}$	$\frac{2a}{5}$	$\frac{4a}{5}$	$\frac{1}{5}$
Lets go of object to reach for another	$\frac{0}{5}$	$\frac{1a}{5}$	$\frac{0}{5}$	$\frac{2a}{5}$	$\frac{3a}{5}$
Looks in direction of fallen object	$\frac{0}{5}$	$\frac{0}{5}$	$\frac{1a}{5}$	$\frac{2x}{5}$	$\frac{3x}{5}$

This system for comparison has worked quite successfully and supplies enough information about the child's responses to decide if learning is taking place. Trial by trial data can also be taken but is more difficult to do when combining several opportunities for accomplishing a variety of objectives in one learning activity.

This type of learning situation is action oriented and may differ from approaches found in many classrooms for severely-handicapped children. The child is being encouraged to act on his environment by moving objects and self through space and time. Opportunities are provided for the child to learn purposeful control over his environment that has been structured to become the cue or stimulus that enables the activity to occur. A combination of the

child's and teachers manipulation of the objects and the feedback provided help to shape the child's response. The attention is focused on what the child does with the materials he has, not on the interaction with the adult unless that is one of the specified objectives.

To grow towards independence children need to (1) accept appropriate controls imposed by his environment, and (2) learn to use appropriate control over his environment. The type of learning structure described may help the child to develop his cognitive ability and some purposeful, appropriate play activity.

Vision-Up is a useful assessment tool for determining if the child has reached the level of development that would allow him to generalize learned information. If this level has not been reached, the curriculum suggests ideas and activities for stimulating concept growth.

Summary

Some of the programs for multihandicapped sensory impaired children in Oregon have found Vision-Up to be a comprehensive tool, combining initial assessment, curriculum, and an easily used method for monitoring child progress. Adaptations described in the use of the curriculum and assessment have been used with success. Teachers feel comfortable enough to plan each child's individual educational plan based on assessment results. Often, a physical and occupational therapist are consulted to validate the appropriateness of motor skill objectives and methods. The system develops and strengthens the users awareness of child development and helps the teacher and parents to plan a balanced, appropriate program for each child.

MISCELLANY

In preparing Blindness 1977-78 an attempt was made to group the articles in terms of the issues with which they dealt. When the task was accomplished, three articles of obvious high quality remained. These were the articles by Ault entitled, "The Impact of a Blind Member on Others in the Family," by Richterman entitled, "Fostering Improved Relationships Between Official and Voluntary Agencies for the Blind," and by Fortier and Keeping entitled, "Another Face of Computing: Service to the Blind." Thus, these three articles are placed in this section called Miscellany. They are all valuable, although unrelated articles.

THE IMPACT OF A BLIND MEMBER ON OTHERS IN THE FAMILY

by

Carroll Ault, M.S.W.
Western Blind Rehabilitation Center
Veterans Administration Hospital
Palo Alto, California 94304

Introduction

Throughout the ages, learned individuals have attempted to develop an exact science of the mind. Plato, Aristotle, and others in the olden days spoke of "Truth," "Virtue," and "The Good Life." In more recent times, physical and biological sciences, as well as theology became the intellectual focus. However, since the beginning of this century the sciences of the "mind" have been progressively reentering the scholarly circles, not at the expense of the engineering and other industrial sciences, but rather to offset some of the effects of overpopulation, competition for life styles, status, and the general uncertainties that prevail in the societies of today.

Persons such as Freud, Menninger, Erikson, Peplau, Chumway, Richter, and many others have made tremendous contributions to mental and physical well-being. In the field of blindness, the late Father Thomas Carroll devoted a lifetime to developing programs and educating people regarding the problems that are encountered by those with

blindness or severe visual impairment. But, blindness and severe visual impairment, although prevalent since the time of recorded history, have never received the same attention as some of the other "disabling" conditions. Mental illness has consistently been a phenomenon of interest. Today alcoholism, drug abuse, sexuality, and "Death and Dying" have taken a dominant place among the concerns of many of the professions and social agencies.

Without regard for the seeming neglect of the field of visual impairment, because of individual and group efforts by concerned persons, many positive developments have occurred, developments that have, to a degree, negated the rather common belief that the visually impaired person has little or nothing to offer on behalf of his family or the community. Even so, the impact of a blind member on others in the family has received minimal attention.

Interpersonal Relationships and Traumatic Crises

Most interpersonal relationships are established on a rather narcissistic contractual basis wherein the individual desires and expectations remain a personal matter rather than being shared openly or in detail. Although the broad goals and plans for the future are frequently topics of discussion, the more subtle matters involved in interpersonal relationships often are unspoken. The duration and intensity of the relationship will be determined on how these unspoken expectations coincide with those of the other person, the ability to resolve differences, and the degree of satisfaction each gets from the companionship.

If the relationship ends in marriage or even a long term "partnership," the family learns to cope with a reasonable amount of uncertainty, economic setbacks, and a few major illnesses, injuries, and the like. In coping the family members use their own ingenuity and the knowledge gained from experiences of relatives and friends. They deal with crises under the assumption that "restoration" is possible and they will be able to resume their previous life styles when the imagined or actual negative effects of the crisis can be reversed, negated, controlled, or circumvented. It is the "catastrophic" or "traumatic" crisis where recovery seems impossible that creates the most strain on interpersonal relationships, in the family as well as among relatives, close associates, and employers.

When people's life styles or patterns of daily living are interrupted by a traumatic crisis or a series of crises, they frequently become confused, sometimes act irrationally without being mentally ill, exhibit random exploratory behavior and, more often than not, become extremely "suggestible." Without a frame of reference from which to operate, they may "grasp at straws," needlessly expending energy and finances to obtain or regain a meaningful way of life--a procedure that will offer them answers and hopes for the future.

When attempts to resolve the various problems involved in overcoming a crisis are unsuccessful, the individual and/or family may seek others who have experienced similar difficulties. If they find others who are going through similar experiences or have had previous experiences, they may join forces and endeavor to counteract the negative effects of the situation. However, if these efforts are consistently thwarted, a process takes place that may be referred to as "Image Formation." Certain individuals, organizations, or agencies in the private or public sector are identified as being positive or negative influences with respect to their situation.

Although newly formed groups have common causes and are looking for resolutions to their problems, they can be thought of more as a "conglomerate" than as a solidified, cohesive entity. Each individual's ethnic background, economic status, religious and political affiliations, and personality make him different from others insofar as his preferences and ideologies are concerned. These factors, combined with life's general experiences, causes the main group to divide into three subgroups. The division usually culminates with a large number of people who think moderately and two smaller groups who tend to think at opposite ends of a continuum--the progressives and the conservatives. The moderates usually serve as mediators or as a proving ground for the periodic attempts of the extremists to create "tidal waves" or maintain the "status quo." The differing ideologies and structures of the two smaller groups become so detailed that they are frequently at odds regarding ways and means of accomplishing the same tasks such as, "Anarchy vs. Totalitarianism," "Free vs. Priced" and "Patronism vs. Personal Development."

Services to the blind and visually impaired people in the United States are divided in a manner similar to that described above. This is relevant to the discussion only insofar as the individual or family who has contact with one of these groups may be greatly influenced by the particular ideology of that group. These influences can last a lifetime and, in many ways, change what may otherwise have been an altogether different adaptation.

The discovery of a visual deficit at birth or the loss of vision by a family member will usually create a situation considered to be a traumatic crisis. The manner in which persons react to sight loss is individualized, both for the person experiencing the sight loss and for those with whom he associates. However, the manner in which the sight is lost frequently has a bearing on the reaction patterns and methods for dealing with the situation by each individual and family. Patterns may vary if:

- a. The sight is lost suddenly and totally,
- b. The sight is lost slowly but eventually is total,
- c. The sight is lost suddenly with some vision remaining, but the condition is stable,
- d. The sight is lost gradually, some vision remains, and the condition is progressive.

More often than not, social and cultural beliefs and biases will govern the reactions. Blindness seems to carry a stigma in most cultures. Visual impairment that is irreversible through surgery, medications, or ordinary corrective lenses has seldom been fully understood or properly treated. Whether the sight loss be partial or total, families frequently find themselves unable to keep the family intact and/or functioning at a level representative of their capabilities. After the declaration has been made that a family member is blind or is going blind and "nothing can be done," the family seems to become disorganized in a way that is similar in nature to the majority of families who go through a traumatic crisis. However, the impact on interpersonal relationships within the family and along close associates may differ significantly from the impact on relationships in a different type of crisis.

Several major factors influencing behaviors and attitudes within the family are the (1) social and cultural expectations and influences, (2) reality factors concomitant with sight loss, (3) the stability of the family as a problem-solving decision-making body, and (4) the capabilities of professional persons and agencies with whom they have contact.

In our culture, childhood training, education, and social experiences do not usually prepare the general public to cope with visual deficits. Most lay persons, as well as many professionals, tend to think of sight as being "normal" vision or "total blindness." Upon initial contact with blindness or severe visual impairment, more often than not, people will react with emotion rather than logic. These responses are manifested along a continuum that ranges from "pity," "overindulgence," and "overprotection" at one end to "denial," "doubts," and "rejection of the person with the visual problem" at the other. Polarized reactions are usually an indication of bewilderment combined with hasty interpretations and evaluations of the person's mannerisms, capabilities and disfigurements, as well as an uncertainty with respect to the appropriate responses to the situation.

It is not just the individual experiencing the sight loss who must cope with these phenomena. The family, relatives, and close associates become involved, and the total "family system" seems to become "disorganized." The stigma of the "blind beggar" lurks in the minds of all family members. Sometimes hereditary considerations will prompt one spouse to believe that he or she has married into an abnormal family line. Children may be questioned unreasonably or ridiculed because of their parent's or their own visual shortcomings. But, the most devastating factor is when one or more family members feel they have been "let down," deceived, or "put upon" to carry a burden for which they did not bargain. Expectations, goals, and dreams become shattered, with no recourse. Legal "blame" cannot be established to provide an opportunity for recovery of, at least, monetary loss. Previously held status cannot be maintained as it is viewed by family members. Regardless, the family usually makes an attempt to recover what is lost or to make an adjustment. However,

there are a few characteristic adaptive patterns that frequently occur and warrant consideration.

1. Initially, there is a disbelief that this could happen to a family member.
2. After they realize the sight loss is factual and irreversible, there is often a resistance to doing anything about it; the idea is that the sight in some mysterious manner will return to normal.
3. Many "shop" through the medical professions looking for answers they wish to hear--that is, that some medical person will have the miracle cure; they just have to look long enough.
4. After exhausting the medical resources, and frequently their finances, they may withdraw to a state of complacency and disillusionment or become hyperactive in an attempt to find something that will fill the void that has been created or negate the crisis that has so obtrusively interrupted their lives.

What is there about sight loss by a family member that causes such erratic and polarized responses to the situation? When a person loses a leg, he soon receives his artificial limb and relearns to walk, drive a car and play golf. The person who survives a heart attack "works" his way back to carrying on activities similar to those he did prior to the problem. The polio patient may have to use a wheelchair, but he may still drive a car and read a book. It is possible that the blind or visually impaired person is unique in that, although he may make recoveries, they are of a different nature. The retrieval seldom allows him and his family the same degree of independence and assurance of livelihood and status as the person who can maintain his or her former job, participate in the same recreational activities, drive the car in the car pool, read a magazine article, or exchange glances that convey messages otherwise unspoken.

There are some adaptations that cannot be ignored and there are psychological adjustments that cannot be circumvented: (1) role reversals, or added duties and responsibilities for sighted family members, (2) revised budgeting due to decreased income, (3) increased medical care and special tutoring or other previously unneeded assistances, (4) early maturity is often required of the children if an adult has the visual deficit, (5) changes in recreational habits, and (6) changes in friendships and group affiliations.

The myriad of complexities in the daily living of any given family is enough to baffle the most astute mind. When sight loss is added to these factors, the situation becomes "mind-boggling." Nevertheless, well-meaning but inexperienced and unaccomplished relatives and friends will "pitch in" and attempt to assist. This unsophisticated assistance usually leads to needless expenditure of

savings, resentment toward those who have given incorrect or misleading information, a feeling that there is no logical solution to what was portrayed as a relatively simple though traumatic situation, and a loss of faith in the future.

Even so, each individual and family, in one way or another, is expected to make an effort on his own behalf, as well as use available extrafamily resources. These expectations may vary considerably among family members. The personal needs and aspirations of each family member often are as disruptive to the family harmony as other influences. Other personal characteristics can be the forces that hold the family together and eventually work through the traumatic periods.

Prior to moving from theoretical concepts to empirical data and clinical findings, a brief discussion of relevant but frequently unanswered questions seems appropriate.

1. What was the family like prior to sight loss by a family member?
 - a. What was the family's role and status in the community, giving consideration to social and cultural factors?
 - b. What was the economic situation as seen by each family member?
 - c. What were serious or chronic medical problems of any family member?
 - d. What were recreational pursuits, individually or as a group?
 - e. What was the role of each family member and the respective privileges and responsibilities each role encompassed?
 - f. How much diversity was there in each family member's life, as well as the choices available for acquiring diversity?
 - g. What were the strengths and weaknesses of the family as a group in planning, problem solving, and decision making?
2. Where did the family member with the visual problem fit into this "system"; where does he fit in now?
 - a. What does the person with the visual loss assume other persons think about him?
 - b. How does the person identify to others how he feels about himself and his situation?
 - c. How does the person actually feel about himself and his situation?
 - d. What is the person actually like?
 - e. How does the person think he relates to "significant others" in his life?

- f. How do other "significant" persons actually feel about him?

Persons who are blind or have severe visual impairment are often cast in the "sick" role by other persons. He or she is the "patient." Other family members, relatives, friends, and many professionals accept this categorization and think of him or her as ill or, at least, incapable of solving problems, making decisions, or doing things for himself. Family and friends become the bystanders waiting for the "recovery" of the patient. Professionals frequently see the family as persons who cannot understand or are meddlesome in the rehabilitation process. Rarely do they realize the need of the family to be informed and involved, nor do they understand or identify the family as a therapeutic tool, a "system," through which the ultimate goals can be attained.

Although persons with visual deficits do have some limitations, to place them in the category of being "sick" when visual loss is their only or major problem, promotes barriers to adjustment and productivity. Likewise, excluding family members, relatives, and close associates from the rehabilitation process can create even greater barriers--barriers that are not so easily overcome or circumvented as those created by the "sick" role.

Supporting Data

The following data that should clarify some of the previous statements, were acquired from preadmission questionnaires sent to veterans and their families prior to the veteran's arrival at the Veterans Administration Center for the Blind and Visually Impaired at Palo Alto, California. The Center has a family training program wherein each veteran may have one family member come to the Center for a one week orientation and training period. Individual and family followup interviews were conducted with each family that had completed a preadmission questionnaire and participated in the "Family Program." Other relevant data will be presented that have been collected through informal exploratory studies in three social service agencies providing services for the blind and those with severe visual impairment. To date, there has been no formal analysis of the materials from either of the sources providing data. However, the tabulations of the various responses to questions seem relevant and permit some speculation and basic assumptions.

NOTE: The data were collected from fifty questionnaires. "No Responses" were not recorded.

Question: When did you lose your sight or start losing your sight?

- A. Within the past year 2
B. More than one year ago 25

(Most respondents equated the time of sight loss with the time they became legally blind.)

During the interview with the family, it was revealed that for over 75% of those for whom the sight loss had been more than one year, this was their first experience with a comprehensive program for the blind and those with severe visual impairment. In all but two cases the family spoke of having received inaccurate or misleading information prior to any contact with persons who were knowledgeable about the resources available to them.

Question: What caused you to lose your sight or start losing your sight?

- A. Injury in the service 13
- B. Accident on the job 2
- C. Accident not on the job 3
- D. Working around the house 1
- E. Result of some other condition 12
(not listed, but family could name the condition)
- F. Doctors not sure 8

Question: Have you worked for a salary or wages since you lost your sight or started losing your sight?

- A. Yes 8
- B. No 37

Only five of the eight who were working when they started losing their sight or lost their sight were working at the time of entry into the Center. Also, five were in school or owned their own business.

Question: If you have not worked for salary or wages, why not? (check all items which apply to you)

- A. Have had no training for a specific job 9
- B. Can get along on my benefits 8
- C. Employers won't hire me 7
- D. I cannot work because I am blind or have poor vision 10
- E. I feel I might get injured going to and from the job 0
- F. I feel I might injure someone else on the job 1
- G. I feel I might get injured on the job 4
- H. I have other handicaps which prohibit me from working 12

- I. My eyesight became so poor that I had to quit work 10
- J. My employer thought I ought to quit work 10
- K. My doctor advised me to quit work 6
- L. I was in school 2
- M. Family members felt I might get hurt on the job 2
- N. Family members felt I might get injured in traveling to and from the job 0
- O. Family members felt I might injure someone else on the job 2
- P. I have my own business 3

Note: Respondents were requested to make entries to all items that seemed to apply to them. None of the respondents checked that they or their family were concerned about the person with the visual loss traveling to and from work. However, in a later question, 19 stated a concern regarding husbands' abilities to travel safely from place to place. The followup interviews revealed that they thought one of the family members would drive the person to work. Two responded that they (both the person with the visual loss and the person assisting in filling out the questionnaire) thought the person with the sight loss could injure someone else on the job, a socially acceptable way to respond but not altogether the complete reasoning behind the person's not working.

Question: Please check one of the items below which is related to the type of work you would like to do in the future?

- A. I cannot work because of my visual difficulties 10
- B. I prefer not to work because I can get along on my present income 3
- C. I would like to do the same type of work I did before 9
- D. I would like to work in a sheltered workshop for the blind 4
- E. I would like to have a job that pays hourly wages, such as in a factory 1
- F. I would like to have my own business 13
- G. I would like to become involved in some profession 12
- H. I do not know what I should do 4
- I. I haven't given it much thought 0

Note: Respondents arbitrarily designated more than one preference, and none stated that he "hadn't given it much thought." Also, they are not anxious to work in a highly competitive production line type of work. Only four believed themselves ready for the protective setting of a sheltered workshop.

Question: Employers are reluctant to hire persons with a visual loss because: (check as many as you feel apply)

- A. They do not understand what a person with a visual loss can or cannot do 35
- B. They think persons with visual loss are poor safety risks 34
- C. They think persons with visual loss cannot produce as much as persons with normal vision 32
- D. They think all persons with a visual loss should work in a sheltered workshop 16
- E. Most of the employees with normal sight would not want to work with a person who has a visual loss 13

Note: The same number of persons who wanted their own business thought that employees with normal vision would not want to work with persons with a vision loss. Also, there seems to be a general consensus that employers do not understand what persons with loss of vision can or cannot do, but the implication is that productivity and safety play a primary role in the determination of an employer to hire persons with a visual loss. This "Image Formation" with respect to employment seems to be directed negatively toward the employer.

Question: If you do not have hobbies, why not?

- A. Not interested in hobbies 6
- B. No one to do hobbies with 4
- C. Hobbies that interest me cost too much 3
- D. Am too tired for hobbies 2
- E. Other (please explain) - 8 stated they could not have hobbies because they could not see well enough.

Note: Of those who stated they had hobbies in a previous question, 14 stated they did their hobbies by themselves. Only one had hobbies that involved other blind persons, and the remainder did various things with both blind and sighted persons.

Question: Are you affiliated with any organizations?

- A. Yes 41
- B. No 8

Note: The majority were affiliated with veterans service organizations, with most members in the Blinded Veterans Association. Many also listed the church as an affiliation.

Question: (to be answered by the family member or friend filling out the questionnaire) Which of the following statements are of most concern to you regarding your (husband's, son's, friend's) loss of sight? (check those items you feel are important and which the veteran is not doing at this time)

- A. His ability to get from place to place by himself 19
- B. His ability to read or type Braille 21
- C. His ability to keep his clothes in order and choose for himself those clothes he wishes to wear each day 14
- D. His ability to use tools or operate machinery 9
- E. Eating habits 7
- F. His ability to get acquainted and socialize with other people 11
- G. The way he feels about his loss of vision 16
- H. How other family members, relatives, and friends feel and react to his loss of vision 5
- I. That he cannot get a job 9
- J. That he is inactive around the house 13
- K. That he does not get out more with other people 13

Question: (for the veteran to answer) Since all veterans at one time had normal vision, most veterans will do better in their adjustment to sight loss than a person who never had normal vision.

- A. Agree 13
- B. Think this might be true 8
- C. Uncertain 5
- D. Probably not true 7
- E. Disagree 15

Note: The responses reflect polarized thinking that may be a function of attitudes. Obtained where?

Question: Before I had a loss of vision, I felt I would rather have anything happen to me rather than losing my sight.

- A. You felt this way quite strongly 15
- B. It entered your mind but you did not give it much thought 9
- C. You never thought about it 17
- D. You thought it could never happen to you 13
- E. You thought that sight loss was something that only happened to persons who had something wrong with them 4

Note: Although people were not requested to check more than one item, a number checked more than one. In a way, this explains one of the reasons people are so unknowledgeable regarding sight loss when it does occur in a family.

Question: (for wife, mother, or friend to answer) A wife, mother, or friend of a veteran must have some time to themselves (check only one).

- A. Strongly agree 14
- B. Agree 25
- C. Not sure 2
- D. Disagree 3
- E. Strongly disagree 1

Note: The responses to this question motivated the interviewer to go into this matter in depth with the respondents, particularly those who agreed or strongly agreed. The results will be discussed in the discussion of clinical materials.

Question: (question to be answered by the person making entries on the questionnaire--mother, wife, other family members, or friend) It is not necessary for a person with a sight loss to be able to write checks on the family bank account since someone will always be around to write the checks for him.

- A. Agree 11
- B. True in most cases 9
- C. Uncertain 4
- D. Not true in most instances 10
- E. Disagree 13

Note: The responses indicated polarization. Is this distribution of responses due to chance factors or the influences of relatives, friends, close associates, or are they group influences?

Question: (to be answered by the person making entries on the questionnaire--parent, wife, relative) Most men

with sight loss expect too much from other family members or friends when they first lose their sight or start losing their sight.

- A. Agree 10
- B. This seems true 9
- C. Uncertain 5
- D. Does not seem to be true 12
- E. Disagree 12

Note: Again polarization seems evident with almost the same distribution of responses. However, it is not known whether the same persons have made the indecisive, the moderate, and the polarized responses.

There were 47 questions in the questionnaire used in this study. However, since there was no attempt to match pairs or set up control groups statistical analyses were not made and thus it is difficult to draw valid conclusions from the information. Much of the information was used for clinical purposes, and the questionnaire seemed to be a useful tool for this purpose. Also, responses to the questions provide "food for thought" for the following section on clinical findings.

Clinical Findings

Many problems common to families who do not have members with a visual loss are also prevalent in families in which a family member has a visual deficit. However, more often than not, the problems will be magnified, although the family may believe they are unique to their situation. Nevertheless, sight loss by a family member does place some definite controls or restrictions on some activities that previously were taken for granted such as, role reversals and/or added duties and responsibilities for sighted family members, decreased income, early maturity for children, and change in recreational patterns, all of which require a degree of flexibility for each family member. Flexibility implies change, and it is commonly known that people generally resist changes that require sacrifices or concessions.

The effects of imminent change for families in which a member has a visual loss are manifested through fears, doubts, embarrassments, false perceptions, and negative attitudes combined with a great deal of frustration on how to cope with the situation.

Change in responsibilities does not necessarily create a disrupting imbalance which culminates in family disintegration, as long as a few basic privileges can be retained for each family member.

1. The right of a reasonable degree of privacy in one's own home.
2. The expectation that one will be listened to when he or she has something to say.
3. That some time will be allotted to each person to do as he or she wishes.
4. The expectation that each individual will contribute and accept responsibilities in accord with his or her capabilities.
5. The right for diversity and the right to choose the type of diversity.
6. The right to be trusted by other family members.
7. The right to be involved in problem solving and decision making.

When family members, whether it be those with visual loss or those with normal vision, experience an actual or imagined deficiency in these basic rights or expectations, they may develop mannerisms that are not in keeping with their usual behavior. These characteristics can range from self-pity and martyrdom to rejection and disdain. The desirable state is for a relatively acceptable balance in duties, responsibilities, and privileges, with all family members feeling they can openly and directly work through any anticipated or current problems. However, this is frequently more easily said than done. There are several phenomena that are probably more often misinterpreted and more difficult to understand than any others that disrupt families, regardless of their health, size in numbers or cultural and social background. The three major ones are possessiveness, confinement, and anger. Clinical findings indicate these three to be the most magnified and destructive in families where there is a family member who has a visual loss.

Overpossessiveness implies a fear of losing the affections or assistance of another person, which in turn can imply mistrust that can be construed in terms of infidelity or in monetary terms. The subtleties are immeasurable and indescribable.

Confinement can be self-imposed or brought about by others. Guilt of leaving someone alone who cannot fend for himself or herself is one of the most common types of self-imposed confinements. Resistance to participating in new experiences or even "facing the world" with a handicap of visual loss is another somewhat different type of self-imposed confinement. But the most devastating confinement is one wherein one person demands, threatens, or cajoles in ostentatious ways not to be left alone.

Anger is probably the most misunderstood and disruptive factor affecting the lives of people. And yet, it probably is the behavior most commonly used to accomplish things when emotions rank above reason. The manner and degree to which a blind or partially sighted

person uses anger can seriously affect the behavior patterns of the entire family. Much of the anger of the person with a visual loss is self-directed, not because he necessarily does not like himself, as is so often the innuendo, but merely because he is thoroughly frustrated because he cannot easily master seemingly simple tasks. If sighted family members think this anger is directed at them for doing or not doing something that should or should not have been done, silent resentments or negative interchanges may divide even the most cohesive group.

Anger is sometimes representative of fear. A person who does not know what he is fearful of may strike out, verbally or physically, at an unknown adversary or object. During these periods he or she is not the most pleasant person to be around. Retaliation by other people can innocently perpetuate this behavior. Anger resulting from fear does, however, serve a momentarily useful purpose in that imprisoned ambivalences can be released, culminating in a period of calmness although the fear or anger may covertly lie in wait for another appropriate time to be released. The complacent, inactive person may be as angry and frustrated as the verbally or physically abusive individual. However, his mannerisms may elicit pity and condolence which in the end will frequently culminate in isolation--a feeling of being left out or abandoned.

The responsibility for explaining or interpreting the reasons for erratic and possibly unpredictable behavior on the part of the person with blindness or visual impairment rests with the individual who displays the behavior. If he or she and the family as a group cannot comprehend and deal with the problem, professional assistance is indicated. Professional assistance requires a delicate balance between counseling, guidance, and training in the broad range of technical and social skills required for optimum adjustment to sight loss.

The negative effects of these three maladaptive phenomena--possessiveness, confinement, and anger--must be interpreted and dealt with in terms that will result in meaningful resolution for each family member.

Conclusions

When a traumatic crisis such as blindness or severe visual impairment occurs in a family or a close relationship, the random, exploratory behavior and the suggestibility of members permits permeation of external influences. Likewise, the reactions of each member to the crisis radiates and influences the behaviors of other members as well as persons outside the family such as relatives, close associates, employers, and the general public. Whether or not a reasonable resolution to the problems created by the crisis can be accomplished, either through individual or group action, will depend on each person's ability and willingness to understand that there

are unique situations and factors involved in a traumatic crisis that are not present in the ordinary activities of everyday living for most people. The professional who understands and has the expertise to deal with these problems can serve as a valuable resource to families who may otherwise disintegrate under the strain.

The following seem to be the three prime factors that lead to successful individual and family adjustments:

1. Unwarranted but understandable fears, doubts, embarrassments, false perceptions, and negative attitudes are diminished by having the family and close associates go through a sequence of systematic observations and guided discussions, such as observing the client function in a variety of situations and under a variety of conditions, and then discussing the various aspects that have presented or are presenting problems. The author of this paper believes it is almost impossible to totally eliminate fears, doubts, embarrassments, false perceptions, and negative attitudes, regardless of their source. More often than not, there is an "overlay" of more positive factors that seem to subdue these defiant irritants; however, at the slightest provocation, they seem to return in one form or another. It is hoped that the individual and the family will have or will develop the understanding and strengths necessary to keep the "positive overlay" as the dominant feature of their life styles.
2. Positive attitudes and appropriate methods for dealing with problems may be acquired through didactic participation in the rehabilitation program and qualified professional counseling.
3. Realistic planning for the future is developed, although slowly, through the combined knowledge and efforts of the client, his family, and a knowledgeable, multidisciplinary team which provides meaningful follow-up. One major function of the team is to educate and encourage the total family to handle problems by utilizing their own ingenuity and the resources available to them in their home community.

In conclusion, all rehabilitation efforts should be aimed at keeping the blind or partially sighted person functioning at an optimal and comfortable level with an understanding of his condition and the ability to relate comfortably to others.

Suggested Reading

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FOSTERING IMPROVED RELATIONSHIPS BETWEEN OFFICIAL
AND VOLUNTARY AGENCIES FOR THE BLIND

by

Harold Richterman
National Industries for the Blind
Bloomfield, New Jersey 07003

Over the years a symbiotic situation has developed among official and voluntary agencies for the blind. This interdependent relationship has been shaped by the need of official agencies for suitable sources of direct delivery of one or more human services such as low vision aids, mobility instruction, vocational and social evaluation, self-care instruction, prevocational and vocational training, workshop evaluation, training and employment, and/or mental health assistance. Limited by tradition, legislation, and procedures in some states from offering such forms of assistance directly to blind persons, official agencies have entered into partnerships with voluntary agency services to establish, upgrade and maintain effective joint programs in many communities. For their part, voluntary agencies have played an increasingly vital role in this partnership, and, in some instances, have even developed a financial dependence upon the fees and grants that flow out of this relationship.

It is altogether gratifying to observe in every section of the country that this interaction is working as well as it is for blind persons. Any relationship of this type generates interagency stresses that require understanding, tact, and forbearance on the part of all concerned. It is to the credit of both the voluntary and official agencies for the blind that the cooperating parties in this relationship have succeeded as well as they have in effectuating a system that functions relatively well for most clients in most situations. Indeed, fundamental conflict among these agencies is far less common than could be reasonably expected given the numerous potential and actual sources of stress among them. This degree of success suggests that the needs of blind persons are, in most situations, taking precedence over interagency rivalries, interpersonal frictions, and interprogram differences.

Despite this generally favorable picture of official and voluntary agency harmony, one can often detect an undercurrent of unresolved tension that warrants examination and, if possible, remediation. Some of this tension is the inevitable consequence of any interagency relationship and derives from personality conflicts, differences in agency philosophy and mission, attempts by one or another of the

parties to dominate the relationship, inadequacies of existing communication networks, and petty jealousies and envy. Official and voluntary agencies for the blind are no more subject to these impediments to effective service than any other human service group nor are they any less successful than others in resolving these difficulties. The crucial point is that, in general, sensitive and involved workers with blind persons are constantly striving to improve the quality of the services which they deliver and, thus, are restless under any inter-agency constraints that limit such relationships. As a consequence, we are all searching for approaches that will enrich an already fundamentally sound basis for working with sister voluntary and official agencies. As long as blind persons continue to have unmet needs, self-congratulation over our apparent interagency successes is less appropriate than continuing self-examination and joint planning.

Innumerable variables impinge upon the interagency relationship about which an extensive literature has been written. For the sake of this discussion, however, I would like to isolate a few factors that are relatively common in service for the blind and which can be changed by individual or agency effort. These variables are listed in the following sections.

Unilateral Righteousness

Without entering into the psychological causes of such attitudes, it can be observed that some participants in interagency relationships are vulnerable to a feeling that all the good intentions in the world reside in them while the other participating agencies seem possessed of perverse devils. In our own perceptions, our flawless motives are apparent while those of our colleagues are suspect. Indeed, so assured are we of our own righteousness that the mere existence of differences of opinion among agencies is interpreted by us to constitute unequivocal evidence of the dubiousness of their commitment and sincerity. Any effort directed toward strengthening interagency relationships is likely to be doomed to failure unless the parties acquire mutual respect for each other's motives, interests, and desires to help blind persons. This requires the abandonment of a comfortable position in which we are on the side of the angels and they are possessed by demons. Cooperation can move ahead only if we can accept the one mutuality that binds up all together, namely, the welfare and growth of blind persons entrusted to our care. If this can be achieved, it is easier for all concerned to accept the possibility that there are a number of routes that can lead to the same objectives and that decisions about the routes to be taken with any individual person are not moral, ethical or motivational, but merely professional judgments that should not lessen our faith in each other. Continuing mutual trust is difficult to attain often requiring prolonged interaction among the parties. Consequently, one remedy for imperfect interagency relationships is persistence in working in a less than perfect situation until trust is painstaking

built on the foundation of repeated contacts and problem-solving experiences.

Advice 1:

No matter how difficult it may be at any stage to do so, stay with a defective interagency relationship over a prolonged period of time. As long as character and mental health problems on the part of individuals and agencies involved are not dominant features, time will help to form a basis for warmer and more trusting joint efforts on behalf of clients. Not infrequently, an interagency relationship is fostered by growing acceptance of each other as months and years pass and people grow in their ability to share feelings with each other.

Abstract Inflexibility

A warm continuing interagency relationship necessitates almost limitless flexibility in perception and behavioral response. Agency and community conditions are constantly undergoing change, clients tend to vary infinitely, and the society in which we live is changing at a frightening pace. The professional worker who maintains the same stance day after day, week after week, and month after month not only frustrates his/her professional partners but actually performs a disservice to most blind clients. The central need in the rehabilitation and maintenance of blind persons is not perservation in the framework of some hallowed tradition but endless creativity in finding new and better ways of fulfilling human aspirations. Rigid constructing of possibilities for clients and impairing easy adaptability to new situations throttles interagency cooperation. Such inflexibility sometimes has its source in the personal needs of agency executives and practitioners or in the unresponsiveness of agencies that become unduly crystallized in their ways of doing things. Further complications are introduced by pseudo-professionalism which is expressed in some disciplines by the tendency of clinicians to hew unbendingly to some abstract principles learned in graduate school, imbedded in some textbook, or anointed by its repetition by a respected instructor or supervisor until it becomes an unyielding quasi-religious dogma.

Perpetuation of such entrenched perceptual structures may be sound for the mental health of the professional worker but they wreak havoc with clients. If our central concern is the growth and welfare of blind persons, our personal ideological commitments are subsidiary so long as we stay within normal legal and ethical parameters. The consumer movement in American human services is a direct reaction by handicapped persons to the perceived rigidity of some professional workers. Indeed, many blind clients cannot understand our profound affinity for routine, red tape, predetermined service sequences, and rehabilitation "by the book." Not infrequently, these attitudes are

viewed by clients as deterrents to their development rather than as facilitators of growth.

As a counterforce to numbing orthodoxy and meaningless preservation, we can take the following steps, each of which will help to "unfreeze" our procedures and make for more effective individual workers, while expediting our interagency relationships. (1) Establishing consumer groups and encouraging them to critique our procedures. (2) Providing advancement into supervisory and administrative positions to those who demonstrate creativity, rather than a safe alliance with the agency establishment, and (3) Introducing measures of flexibility into our personnel recruitment and selection processes.

Advice 2:

Employ flexible and creative agency personnel at all levels and reinforce creative adaptation by agency workers by setting up a reward system that emphasizes the value of innovation and individualization in service to blind persons.

The Client as Mediator

In virtually every interagency difference of opinion, specious battle lines are drawn between groups which contend with each other in a type of escalating verbal warfare while the client waits on the sidelines until a resolution occurs. Yet, it is the client who is most affected by such disputes. It is difficult to envision professional workers accepting for themselves the passive role that blind clients usually are assigned in most instances of interagency conflict. At the very least, they would not like to become objects over which a struggle is being waged without having inputs in the confrontation. Yet, clients are repeatedly subjected to a sideline status. To many clients these struggles seem rather immature, irrelevant, and capable of being resolved by the mere application of common sense with the client sometimes being the most rational party in the situation. Equally important, if we are truly committed to maximizing client independence and self-direction, this commitment should begin during the rehabilitation process, with the client assuming as responsible a role in the interagency process as the professional workers. Observation suggests that the presence of a client at the scene of interagency conflict soon precipitates a resolution of differences. In practice, clients can pinpoint the shallowness and superficiality of such differences, causing the contending parties to feel a sense of shame about inconsequential and self-seeking issues that characterize many disputes of this type.

Advice 3:

Develop a dynamic role for clients whenever interagency planning and cooperation are required in their cases and with interagency problems in this context, encourage clients to mediate the problem in their own best interest.

A Problem-Solving Emphasis

Interagency cooperation can be a costly process. If the hours devoted to oral interaction for one year of representatives of various agencies working together for blind persons were laid end-to-end, the time spent would approximate that needed to reach the planet Pluto. Professionals generally enjoy talking, particularly about abstractions, philosophy, and conceptualizations. This is all very well and is quite healthy for these workers, but the time employed in this activity could be used for other client service activities and anyway, much of this disembodied talk resolves very little. On the contrary, these abstract verbalizations can heighten differences as much as resolving them.

In interagency relationships, much conversation focuses upon analyzing and intellectualizing the relationship, when client service is what is really needed. Interagency relationships usually evolve more easily by working together in a reality framework rather than by talking or writing about them in a legalistic attempt to anticipate every contingency and close every loophole. Customarily good long-term interagency relationships develop as the participants involve themselves in the concrete problems that confront individual blind persons. Thus, an effective approach to interagency cooperation is one in which the workers concerned experience each other in the helping process rather than using their time to write a constitution, a contract, or a manual of operations. Sharing a commitment to help blind people and establishing a readiness to forego ceremony, ritual, and self-serving concerns, agencies with goodwill rarely need documentary support. Indeed, formal arrangements can constrict the quality of service when the workers concerned begin to worship the legalities of the situation rather than attending the infinite variety of clients' needs. Accordingly, successful interagency relationships quickly get to the heart of the matter--a client requires assistance and individualized interagency programming must be developed with minimal interference from agency shibboleths and personal prejudices. Ideology has a place in this process but not at the expense of clients, communities, or interagency relationships.

Advice 4:

Focus interagency contacts upon actual needs and hold the participants in these contacts accountable for service rather than verbiage.

In this framework, it is appropriate to consider some issues that generally arise in any discussion of relationships between official and voluntary agencies for the blind. Among these issues are:

Written contractual agreements:

Since there is virtually no way to enforce interagency written contractual agreements, the people involved in the process are far more important than the papers that emerge from it. Furthermore written agreements tend to prematurely harden interagency procedures that really need to remain adaptable to individual situation. In this light, written agreements are not a first order priority in interagency relationships. In fact, some really good interagency relationships function perfectly well without them and some are horrendous despite being covered by detail documents.

Knowledge of government regulations:

Whenever government regulations are in the public domain, provisions can be readily made by public and voluntary agencies so that voluntary workers attend public agency briefings concerning changes in regulations and procedures. Concurrently, voluntary agencies can readily hold periodic briefing sessions for public agencies. This is so simple and universal an approach that it can become standard operating procedure almost everywhere.

Assistance to the public agency by the voluntary organization:

Voluntary agencies can easily assist public agencies in the following ways:

- a. The voluntary agency should perform its contracted mission by delivering quality services in accordance with its interagency contractual responsibilities.
- b. Voluntary agencies can understand the special problems of public agencies and serve as their advocate in the legislature, the executive branch, and the community.
- c. Voluntary agencies can fulfill their mission to innovate, experiment, and explore new avenues of service when the nature of government does not permit the public agency to do so.

Essentially, the most meaningful assistance will be offered by voluntary agencies that perform their assigned functions, not those of the public agency, and when they support, supplement, and enrich public programs.

Staff training:

Sound interagency relationships develop when open doors exist among the cooperating organizations. This is especially true in the training area. Thus voluntary agencies inservice training sessions should be open to employees of public agencies and vice versa because such training programs are especially favorable for building mutual trust and respect.

Structure vs. people in interagency cooperation:

The heart of interagency cooperation is people rather than regulations. In view of this, the most effective means of assuring cooperation is to select the cooperating personnel so that the optimum interpersonal chemistry is compounded. Assigning "difficult" or "intractable" personnel to the delicate task of effectuating interagency relationships is the most common technique of dooming the effort to failure.

An overview of the field of service to blind persons suggests that in many states, the cordial and cooperative relationship that currently exists among government and voluntary agencies is making a major contribution to the welfare of the visually handicapped. The basis for this effective relationship more often than not is rooted in:

- a. A mutual respect for each other's motives and commitment.
- b. Extensive flexibility of the part of the cooperating agencies and personnel marked by a readiness to adapt to each other's limitations and restrictions.
- c. A role for clients in defining the interagency relationship as it functions in his/her case.
- d. A focus upon solving the problems of individual clients rather than upon interminable introspection and theorizing.

There is no magic formula that applies to every situation. Local conditions and human personalities vary so widely that precise prescriptions for any single situation are impossible. In practice, a standard recipe for insuring continuing public and voluntary agency cooperation would hinder as much as it would help. Actually each relationship has to be fashioned in the image of the people concerned and the unique conditions under which they function. In this view, it will never be easy to establish any ongoing interagency service pattern. But, in a world in which cooperative existence between the public and voluntary agencies is essential for the rehabilitation and maintenance of blind persons, there is no alternative. When the central goal is to serve the handicapped, personal inclinations, pride, and dominance needs have to be relegated to subsidiary roles while we go through the always painful process of forgoing interagency relationships.

This task is made even more challenging by reason of the fact that such relationships are at best, transitory. No sooner do we attain an apparent stability in the relationship than new legislation, replacement personnel, modified procedures, special client needs, shifting agency priorities and policies, and changes in rehabilitation service emphases upset the balance and a need arises for alterations in the relationship. In this context, interagency operations must be constantly nurtured by infinite patience and understanding, human qualities that are still rare in the helping field.

All too often, rehabilitation services the deliverers of services better than the recipients. This can never work in evolving a sound functioning relationship between public and voluntary agencies since the only common meeting ground that is firm enough to support such a relationship is a wholehearted commitment to the blind people we serve. It is at this point that interagency cooperation should begin and, in truth, it is precisely there that it will persevere over the years.

ANOTHER FACE OF COMPUTING: SERVICE TO THE BLIND

by

Paul A. Fortier, and Donald Keeping
Associate Professor Supervisor
French Computer Braille Service
University of Manitoba
Winnipeg, Manitoba

Introduction

The popular media are all too willing to present the computer as some sort of malevolent electronic genie, relentlessly destroying jobs, invading privacy, and shamelessly cheating holders of credit cards or users of public utilities. In our early fascination with the technical side of computing, we frequently gave a degree of legitimacy to the creation of this erroneous myth, by reeling off figures about the speed with which the machine can perform mathematical operations or retrieve data.

The computing profession has now reached sufficient maturity that we have learned to control our public fascination with the gadgetry aspect of our work. It is now possible for us to look back over our accomplishments and to see powerful arguments against the pernicious and oversimplified image that our detractors continue to present. A singularly striking area of accomplishment is service to the blind. Theoretical work and practical applications are opening up unsuspected new vistas for people whose visual handicap would otherwise have imprisoned them in an unnecessarily limited world. The most striking successes of computer applications for the blind have been in the field of education, both in the narrow sense of training for a vocation in life, and in the broader sense of transmission of knowledge in general.

In Denmark, a computer-based study of Danish Braille codes has permitted simplification of the Braille contraction system and opened the way to more efficient Braille production by computer.¹ In the Federal Republic of Germany, a computer-produced Braille news magazine is furnished every two weeks to the blind free of charge.² In the United States, in Great Britain and in Canada, the computer is an integral part of educational services to the blind.^{3,4,5} Particularly interesting is a project at the Conservatoire National des Arts et Metiers, Paris, which will use the computer to produce not only Braille versions of texts, but also tactile representations of figures and illustrations. The number of development projects in this area,

recently completed or nearing completion, is so large that a journal has been founded to help researchers keep abreast of advances.⁶ The latest issue of this journal (August 1976) records twenty-three projects being carried out in six countries.

In view of the number of projects for computer-assisted service to the blind, we have chosen to limit this presentation to our work at the University of Manitoba. We believe that our work is typical of what information processing techniques can do for the blind, and our references permit the reader who is interested in other applications to find documentation concerning them.

Our presentation is divided into three sections: Education of blind programmers, Braille production for education, voice synthesis.

Education of Blind Programmers

The performance of jobs that are not purely manual typically involve dealing with substantial quantities of material in printed or written form. Because of this fact, and because their outlook was formed in the last century when manual jobs were more plentiful, organizations dedicated to educating the blind have tended to channel students towards manual jobs, and to train them mainly for this type of employment. Advances in industrialization over the past hundred years have meant, however, that fewer and fewer satisfactory manual jobs are available to the blind.

Although some blind people of limited ability or ambition might be content with the type of job available--typically running a canteen or newspaper concession, making brooms or pillows--others need the opportunity for more challenging and more fulfilling work. In response to this need, the University of Manitoba and the Canadian National Institute for the Blind established a course to train blind computer programmers in 1965.

This Programming Course for the Blind lasts one academic year and leads to a certificate in computer programming. It is outside the academic courses of study leading to a degree and is run on a cost-recovery basis at the Computer Centre of the University. Students in the course are expected to have successfully completed university-level academic work, and preferably have a degree. They do pay fees, although these are usually covered by social service agencies.

The special status of the course permits it to be specially structured for the needs of blind students. A terminal producing output in Braille, and a device to interpret punched cards for blind users are available to them. The supervisor of the course who is responsible for curriculum, teaching, detailed operations, admission and counselling, is himself blind. He is thus in a good position to understand the problems and evaluate the capacity and progress of the students.

The course covers the standard materials needed for a training in programming: introduction to computing concepts, assembly language programming, COBOL, PL/1, flowcharting and documentation, text editing systems, and information retrieval systems. The major emphasis in the course is on COBOL programming and twenty-five to thirty programming assignments are done in the course of the year. Usually the course concludes with one month's in-service training in a commercial computer installation.⁷

In twelve years of operation more than sixty blind students have graduated from the course and are currently employed as computer programmers.

Braille Production for Education

Background:

The Braille system represents letters, punctuation and other signs using a basic cell consisting of two columns and three rows. Thus the maximum number of signs is sixty-four. Figure 1 shows the letters of the alphabet, which are common to all languages using Roman orthography. The representation of accented letters, punctuation and special symbols varies somewhat from language to language.

a	b	c	d	e	f	g	h	i	j
•	•	••	••	•	••	••	••	•	••
	•		•	•	•	••	••	•	••
k	l	m	n	o	p	q	r	s	t
•	•	••	••	•	••	••	•	•	••
•	•	•	•	•	•	••	••	•	••
•	•	•	•	•	•	•	•	•	•
u	v	w	x	y	z				
•	•	•	••	••	•				
••	••	•	••	••	••				

Figure 1.--The Braille Alphabet.

Given the size of Braille cell needed for each recognition by the user and limitations on manageable size of the Braille page, the largest number of signs that can fit on a page of Braille is one thousand (twenty-five lines of forty characters each), in contrast to the twenty-five hundred or more signs usually found on a page in a printed book. To compensate for this dilution of information per

unit area, in order to speed reading and writing, and to minimize use of expensive Braille stock paper, a contraction system for Braille was developed in the late 19th century. Frequently appearing words, and frequently appearing syllables or strings of letters are replaced by a single Braille character. Each language has its own contraction system, since frequent words and syllables vary from one to another. Over time these contraction systems have taken on the characteristics of sublanguages in their own right, with rules of grammar, exceptions admitted by usage, and even local dialects. The French abbreviation system is characterized, for example, by a high degree of formal rigour in the enunciation of its rules, whereas the English system's rules are less all-encompassing, but their application is subject to a tradition of interpretation which has grown up through pragmatic experience. One can see a parallel here with the French Napoleonic Code and the English common law approaches to judicial systems.

No matter what the abbreviation system, traditional production methods are similar. A person learns to produce Braille characters using a six-keyed device, on which each key corresponds to one position in the Braille cell. He or she then learns the abbreviation system for the language being used. Actual production of Braille is done by sitting down with a copy of the printed text, mentally translating it to the required Braille codes, and depressing the appropriate keys. After the Braille has been produced, it is proofread for accuracy of representation of the text, and for correctness of abbreviation. Errors require that a whole page of Braille be retyped.

When single copies are needed, the Braille is produced directly on heavy paper stock. Multiple copies are produced by typing the Braille onto zinc plates, which then are applied under pressure to the Braille stock.

It can be seen from the above that the Braille producer must have great powers of concentration, good manual dexterity and a high degree of mental agility. It should be no surprise, then, that it requires six months training to become a competent Braille translator using traditional methods.⁸ Nor is it surprising that a page of Braille takes roughly twenty minutes to produce; to which an average of ten minutes set up and proofreading time must be added. It should also be recalled that a page of print produces from one and a half to two pages of Braille. Traditional production of Braille is thus a very slow and expensive process.

Given these conditions, the amount of available Braille has never approached fulfilling the need. In the past few years a number of circumstances have converged to bring this paucity of Braille to crisis proportions. First there is a growing problem of personnel. Traditionally, producers of Braille have been either volunteers working without remuneration, or people willing to work for the low wages which were all that charitable organizations could afford to pay. Recent social changes have resulted in the virtual disappearance of volunteer labour, sharp increases in the minimum wage, and a reduction of the number of people willing to carry out a difficult and complex task for low wages.

Increases in the price of raw materials have meant that larger and larger press runs are required before production of multiple copies from zinc plates becomes cost effective. Storage of the zinc plates represents both an immobilization of capital and a serious warehousing problem.

Finally, it has been realized that the facilities of special residential schools for the blind are better reserved for blind students having multiple handicaps. Blind students without other afflictions are better off in ordinary schools where they can learn to function in a sighted society, and where they are not cut off from the goals and aspirations to which their abilities entitle them. This, however, requires a wide range of Braille texts, because textbooks vary from one school division to another, and textbooks are constantly being changed or revised. This was not a problem when all blind students were in a special school, where it did not matter if the texts were out of date, so long as they were the same for all the students. Given the variety of texts needed and the short time usually available between the finalization of a textbook list and the beginning of classes, traditional methods cannot produce sufficient Braille, in a short enough time, to meet the need.

Thus, traditional Braille production methods are not able to meet the basic needs of primary and secondary education of the blind. Braille material for other purposes, like technical manuals or university texts, is even more difficult to obtain.

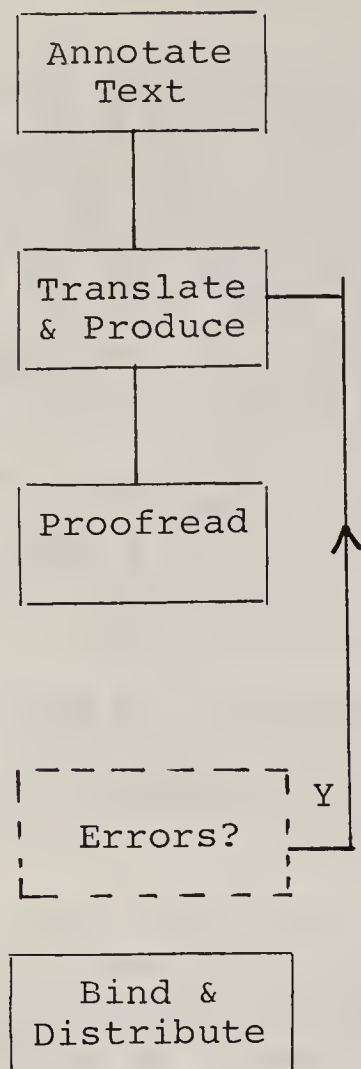
Computer braille production:

The expense and delays of traditional Braille production result from the fact that the process of conversion to Braille is carried out by highly-trained specialists. Supplementary problems arise from the impossibility for a page of Braille to be proofread for accuracy before the conversion process has been completed, and from the impossibility to produce a few copies of Braille on a cost-effective basis, or conveniently to store Braille texts.

Figure 2 on the following page shows how information processing techniques allow these difficulties to be overcome through application of the standard Cartesian method, i.e., division of a large problem into manageable components.

Readily available text-editing systems allow conversion to machine-readable form of a text to be converted into Braille by typists who need to learn only the protocols of the editing system. Training time thus drops from six months to six hours. The input text can be printed for proofreading before being translated into Braille, thus obviating the need for a Braille reader to do proofreading, and permitting use of the economical correction facilities of the text-editing system.

TRADITIONAL METHODS



COMPUTER METHODS

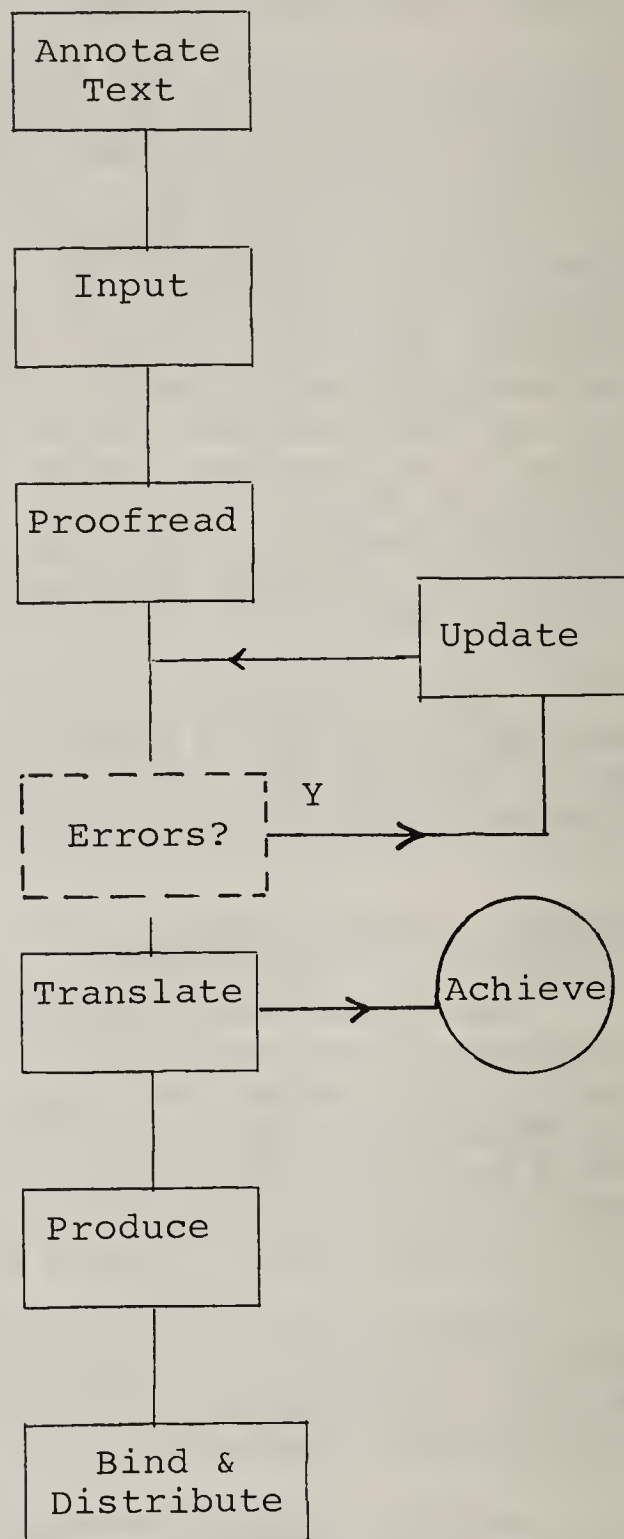


Figure 2.--Braille Production Methods.

Once the input text is as correct as possible, a program translates it into the codes needed to produce the Braille, and a copy of this version of the text can economically be stored on tape. An output device accepting standard ASCII code via telephone lines or direct hookup actually embosses the Braille.

We have been able to profit from these advantages in two concrete situations which clearly illustrate the solid contribution that information processing techniques can make to Braille production.

In January 1973, the problems of a blind university student studying languages came to our attention. She did not have her texts in Braille and was not able to absorb sufficient information from audio tapes to be successful in her studies. It was possible to develop in one week a simple conversion and reformatting program which took input codes used in a pure research application and converted them to the codes and formats needed to produce uncontracted Braille. A crash program produced sufficient Braille material by the end of March for the student to pass her first year examinations. In the two following summers, it was possible to set up four month production projects using untrained student assistants and produce all the Braille texts needed by this student for second and third year language studies in French, Spanish and German. A total of 18,000 pages of Braille were transcribed.^{9,10} The student received her B.A. after three years of study--which is the normal time taken by sighted students.

In the summer of 1974, we learned that the Department of Educational Rehabilitation in our province had decided to remove blind students from special schools and to send them to ordinary schools. Traditional Braille production methods were able to provide only about 10% of the Braille textbooks needed by these students. Here again we applied standard information processing techniques,¹¹ and we were able to use the DOTSYS III Braille translation program which produces good quality abbreviated English Braille.¹² A permanent Braille production facility has now been in place for three years. This has led to increasing speed and efficiency in turning out Braille material. We are now producing Braille at the rate of more than 30,000 pages per annum. The standard turn-around time from reception of a book to be Brailled to completion of the Braille version is now one week. The most gratifying aspect of this success is the fact that in September 1976 all the blind students in Manitoba schools began their year with all the Braille textbooks that they would need for the entire year. There are few if any places in the world where blind students are so well served.

Research and Development:

Our first research work on Braille was aimed at improving output from the existing DOTSYS III program in view of the intended users. We have developed a more flexible and extensive set of output format routines to facilitate usage of the Braille text, notably adding

special formats for plays and tables of contents, adding indication of when the page of the source text changes, and implementing a command forcing the output to a new page to signal important features or to avoid breaking up a table. The modified program can now produce uncontracted French, German, Latin and Spanish Braille as well as phonetic transcriptions, and the surrounding English text appears in abbreviated English Braille. To facilitate use of math, science and technical texts, we have also implemented a capacity to produce Nemeth code Braille mathematical notation.

More recent phases of this work have been directed toward simplifying input routines, and extending output capacities to other media. A program which has just been completed, generates from text input in standard print format the formatting commands needed to drive the DOTSYS program. Thus the person inputting the text no longer has to remember the rather complex set of DOTSYS format control commands. He or she simply types the text as it appears. This innovation saves time in training of personnel, in actually inputting the text, and in proofreading.

We also have a program which produces texts in greatly enlarged typeface, using a Versatec electrostatic plotter/printer. This kind of text is useful to people who are not totally blind, but whose sight is so limited that they cannot read normal-size print. Input to this program is the same as for the DOTSYS Braille translation program. So, the same text can be produced both in Braille and in enlarged format from a single inputting. It is also possible to vary the size and shape of the letters output so that they precisely fit the needs of the individual handicapped user.

Another research project, now nearing completion, is aimed at producing contracted French Braille.¹³ This abbreviation system has 3,000 word abbreviations which are in effect exceptions to the syllable contraction rules. The approach developed for translation to English abbreviated Braille is table look-up. But the cost of the program's operation rises quite sharply in proportion to the size of the table. Already in English Braille 98% accuracy had to be accepted, rather than 100%, in order to keep the cost of the program within reasonable bounds. Since a table look-up type program for French was not practicable, we borrowed techniques commonly used in linguistic analysis programs.^{14,15} Exceptions and previously resolved cases are stored in a sequential file. The text is broken up into word records, which are sorted into alphabetical order. The two alphabetical files are compared to find known contractions before any abbreviation is computed. No matter how many times a word appears, its abbreviation is determined only once. This letter feature offsets the cost of dividing up and sorting the text. Once the whole file has been processed, it is resorted into text order, and formatted for output. We are also applying this approach to see if we can improve the accuracy of present programs for English abbreviated Braille translation within reasonable cost.

Once the project for French Braille is completed, we intend to begin work on implementing Braille production in French and English on a minicomputer, so that the advantages of computer-produced Braille not be limited to organizations having access to a large and powerful multiprocessing system.

Voice Synthesis

Work with computers is certain to produce vast quantities of printed paper from the line-printer. Most of this printed paper is ephemeral--updated program listings to be checked once and discarded after further updates have been made, and listings of data files. If one can visualize the amount of paper that crosses a programmer's desk in a month, and sometimes piles up in the corner of his office, and multiplies this bulk by five to include the greater bulkiness of Braille, one can appreciate a difficulty facing the blind computer programmer. It must also be recalled that Braille stock paper costs approximately five cents per page. Thus, although Braille output might be useful in a training situation, it is hardly practicable in the context of day-to-day production.

The standard solution to this problem has been the employment of a sighted reader to help the blind programmer. This solution has two flaws. First is the cost, which tends to be openended and subject to the constant upward pressure on wage rates. Second, and more important, such a solution creates an absolute dependency of the blind programmer on the reader. Not only is the blind person at the mercy of any errors made by the reader, but he is also constantly reminded of his handicap--hardly a happy work situation.

In response to these problems, we obtained in 1974 an inexpensive audio response unit. This machine is a true voice synthesizer, not simply a device for echoing recorded speech. During the summer of 1975, a team of computer specialists and a technician with training in linguistics and phonetics developed a minicomputer program to drive the voice synthesizer. A basic vocabulary of 1,100 words consisting of those most frequently used in a computing environment, was built into the program that automatically attaches to this core vocabulary standard endings like ing, ed, s, etc. and modifies pronunciation of the stem as required. Numerals, punctuation marks, mathematical symbols, and words falling within the extended core vocabulary are pronounced. All other words are spelled out.

A minicomputer with the program resident acts as an interface between a typewriter terminal and the university's multiprocessing system. It passes on without change commands sent from the terminal, but translates responses going to the terminal into audio (spoken or spelled) output which is transmitted to a loud-speaker next to the terminal. Thus the blind programmer can work interactively and independently. In fact, since the speaker on a tape recorder is used for output at our installation, the user can type a command,

switch on the recorder, and come back later to find his output waiting for him in audio form, just the way a sighted person can with a typewriter terminal.¹⁶

After more than a year of testing, we can report the complete success of this concept. The blind programmer who is using the system is now able to work unaided with the same speed and productivity as his or her sighted colleagues. More important is the fact that the blind user has reported a high degree of satisfaction with his new working environment.

Conclusion

Special programming courses for the blind, production of Braille or enlarged print textbooks which might be used only by one or two students, and audio response units, are expensive. In the latter case, cost-effectiveness can be measured by comparing the capital investment in equipment to the salary of a reader over the life of the device. In the former cases, return on the educational investment can be measured in terms of the difference between what a blind person paying no taxes and drawing a disability pension receives from the public treasury, in contrast to what the same blind person pays in taxes when gainfully employed. In all of these cases, the benefits outweigh the costs.

The main benefit of the projects is, of course, not financial. The common element in all of them is that they open up new horizons for the visually handicapped. Who can calculate the financial return on hope? Who can put a dollar value on human self-fulfillment? Everyone can understand such values, and few would question their importance.

We believe that it is essential that information about this type of project be disseminated as widely as possible. It will encourage still more such work, and the need is great. It will also diminish in the public mind the erroneous vision of computer professionals as sorcerer's apprentices or mad scientists fascinated by evil machines. It shows information processing in its true light, that of a mature profession, ready and able to turn its interests outwards and contribute powerfully to the solution of real and pressing human problems.

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1160

154

